

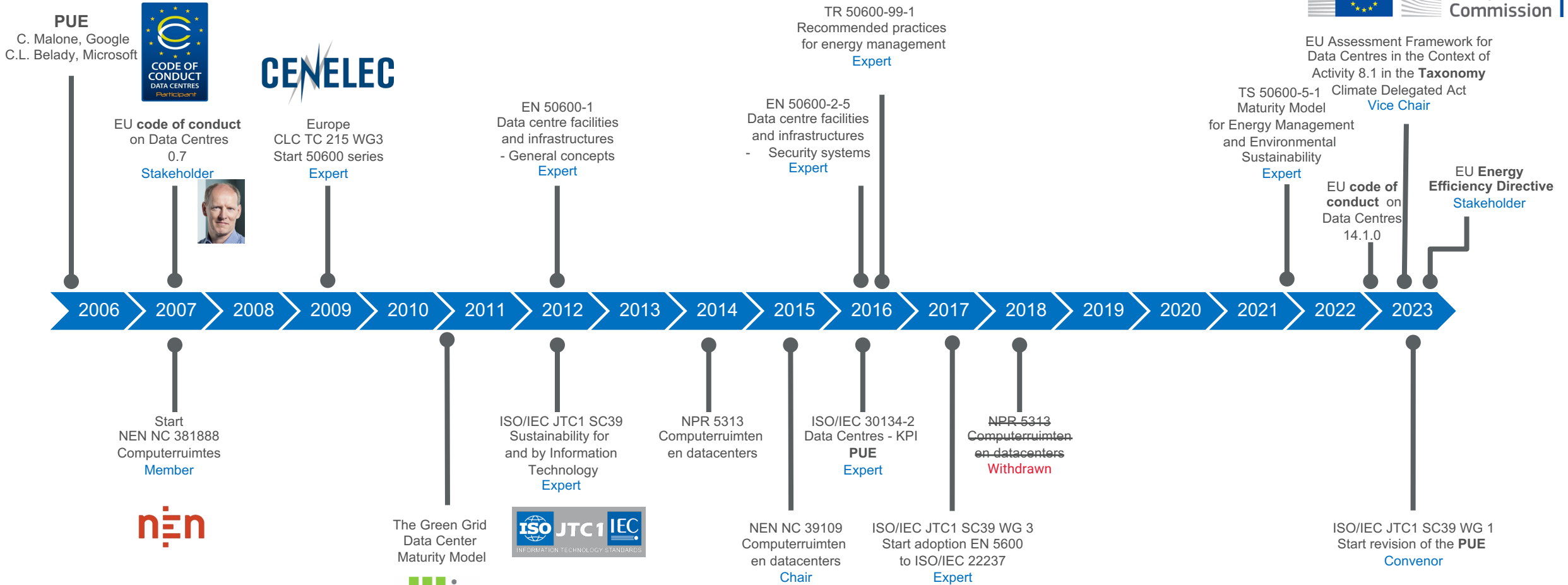
# THE EU GREEN DEAL: IMPACT FOR DATA CENTRES

2023 – NIEK VAN DER PAS

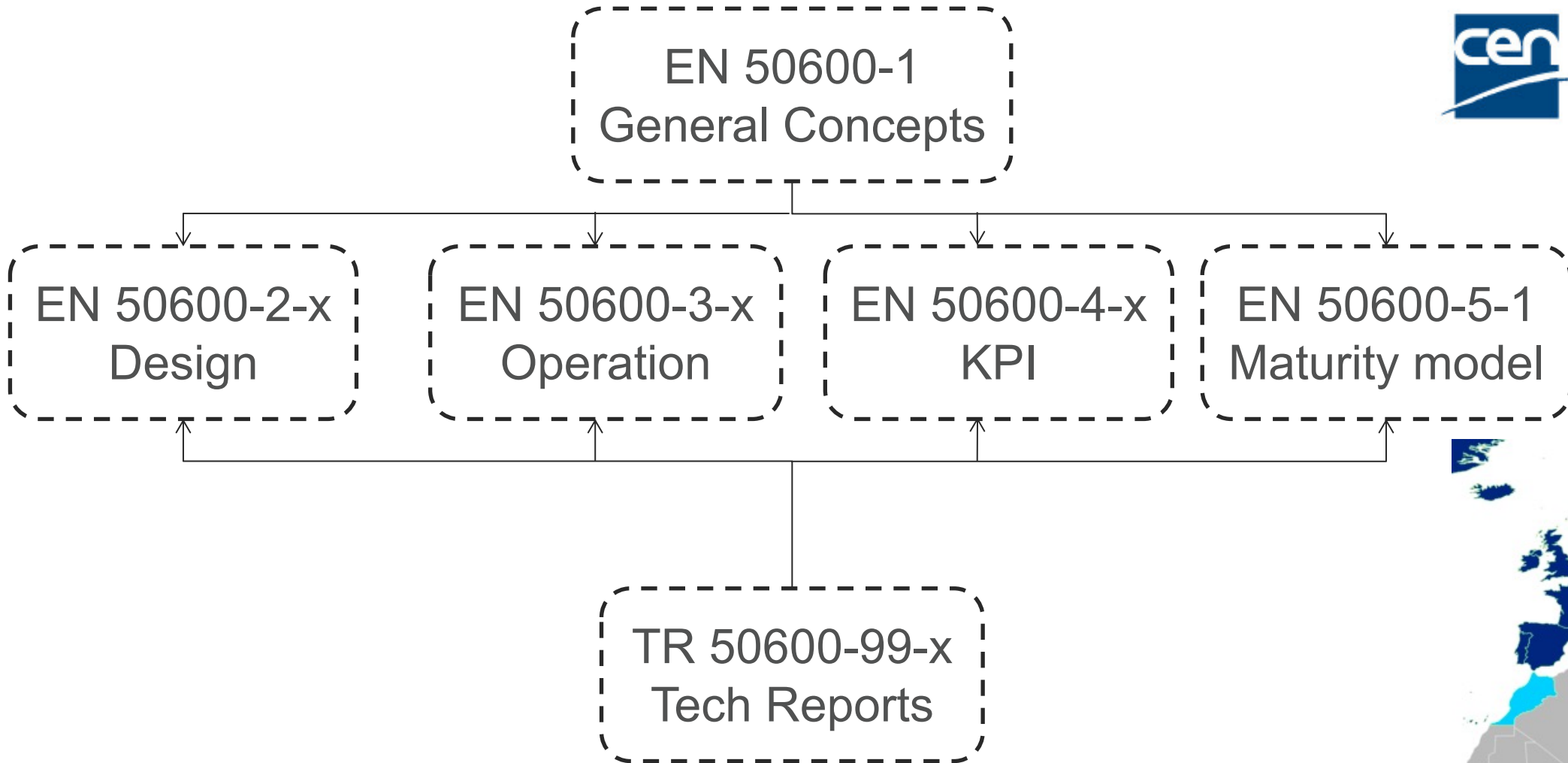
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GREEN DATA CENTER  
CONFERENCE JAARBEURS  
UTRECHT OCTOBER 11TH

# Data Centre Standards and Regulations Timeline



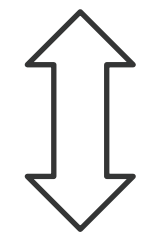
# EN 50600 Series



# EN 50600 Series



EN 50600



EN 50600-1  
General Concepts

EN 50600-2-x  
Design

EN 50600-3-x  
Operation

EN 50600-4-x  
KPI

EN 50600-5-1  
Maturity model

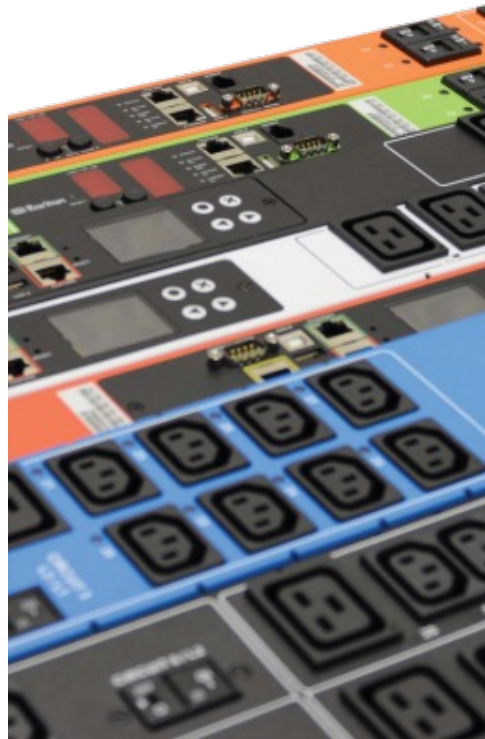
TR 50600-99-x  
Tech Reports

# EN 50600-1, ISO/IEC 22237-1 General concepts

## Availability



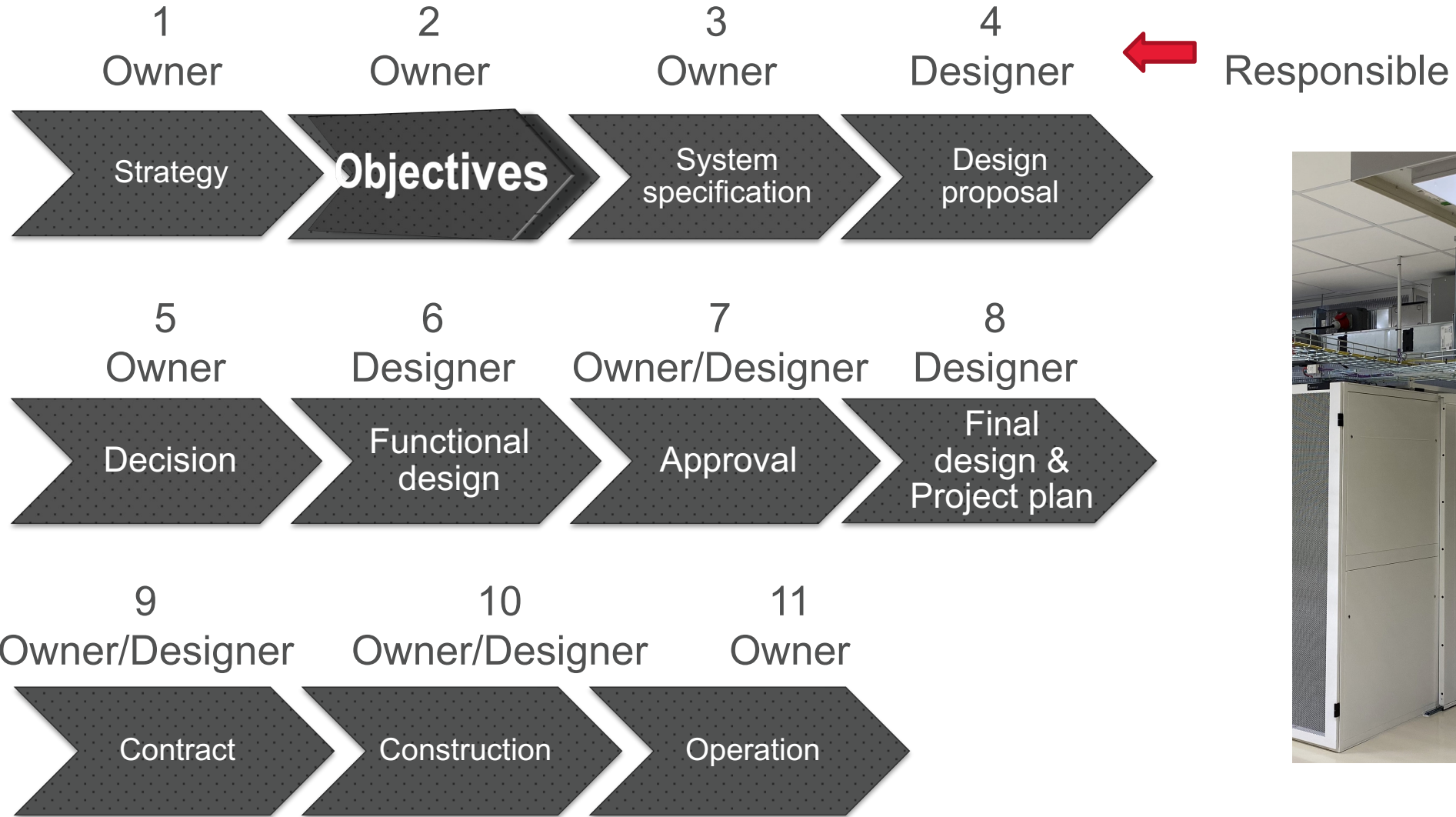
## Energy Efficiency



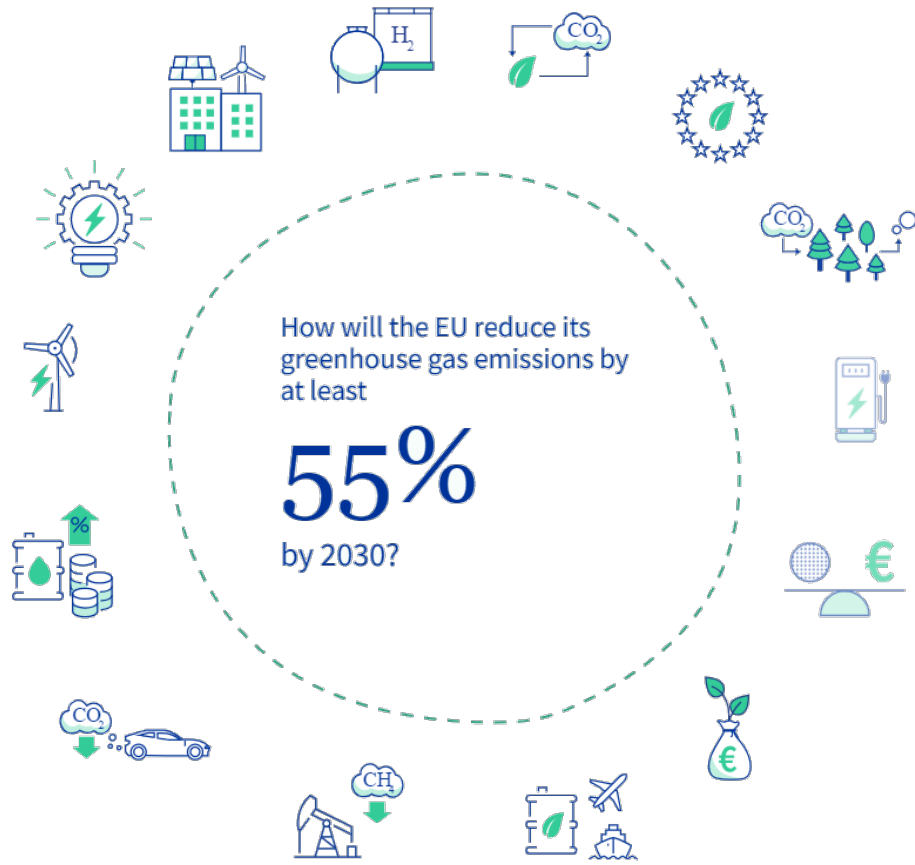
## Security



# EN 50600-1, ISO/IEC 22237-1 General concepts



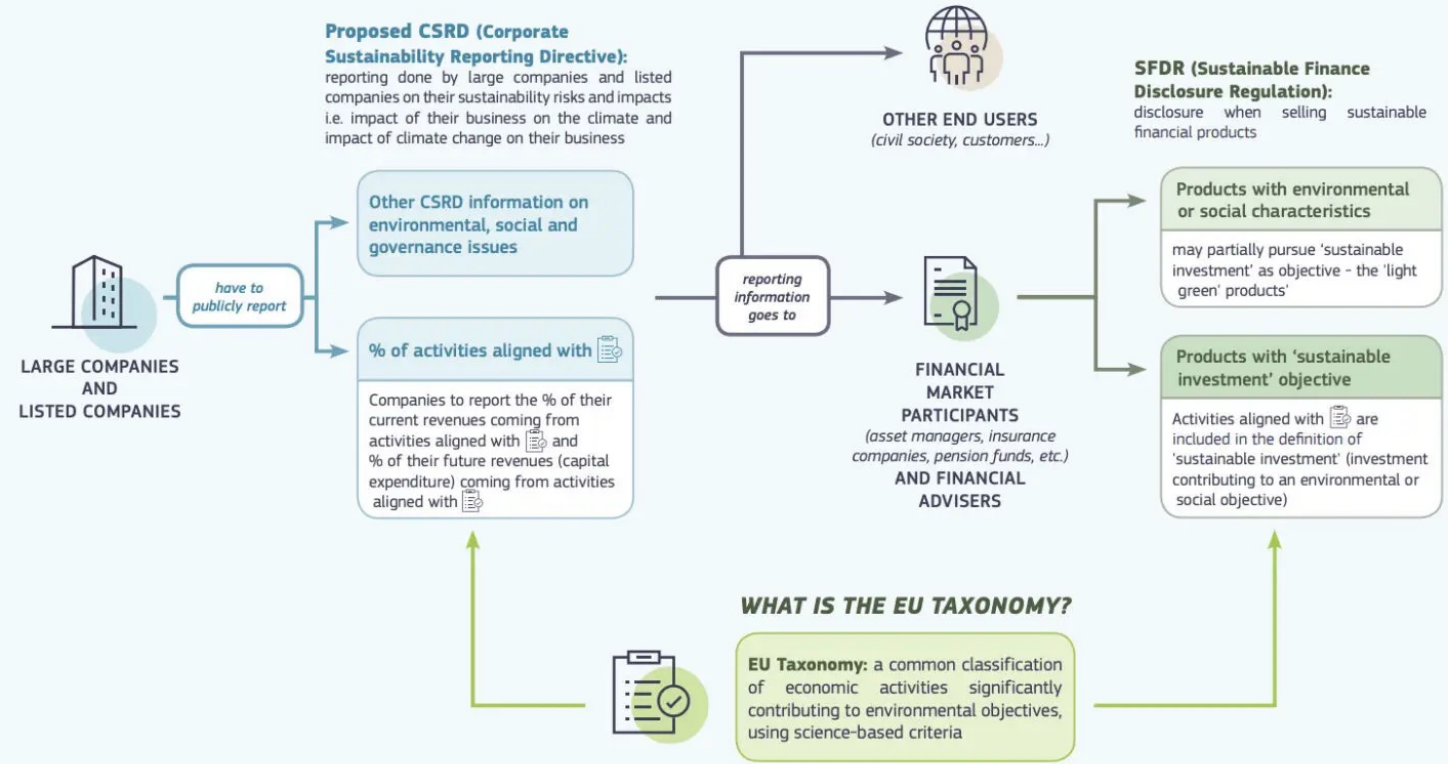
# Fit for 55





## HOW DOES THE EU TAXONOMY FIT WITHIN THE SUSTAINABLE FINANCE FRAMEWORK?

Two examples when the taxonomy will be used:  
in disclosures of financial products and reporting by large companies and listed companies



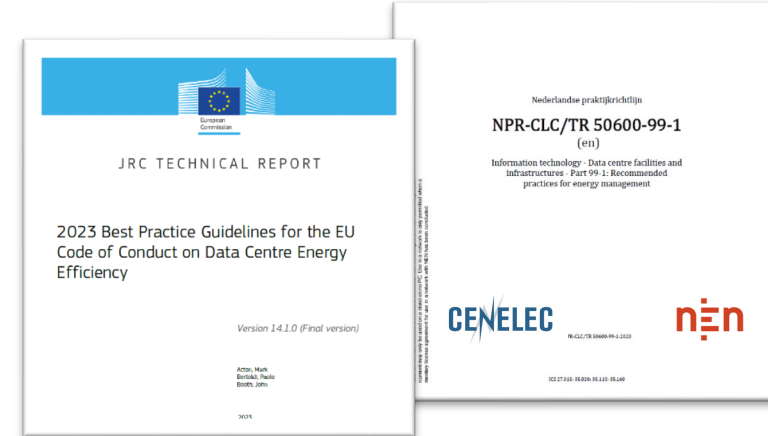


# EU Taxonomy

Substantial contribution and no Significant harm



- Implement all the relevant “expected practices” of the EU CoC on DC EE or TR 50600-99-1 and has implemented all expected practices that have been assigned the maximum value of 5 according to the most recent version of the European Code of Conduct on Data Centre Energy Efficiency.
- independent third-party and **audited** at least every **three** years
- Where an expected practice is **not** considered relevant due to physical, logistical, planning or other constraints, an explanation of why the expected practice is not applicable or practical is provided. **Alternative** best practices from the European Code of Conduct on Data Centre Energy Efficiency or other equivalent sources may be identified as direct replacements if they result in similar energy savings.
- The global warming potential (GWP) of refrigerants used in the data centre cooling system does not exceed 675.
- The equipment used meets the requirements laid down in Directive 2009/125/EC for servers and data storage products.



# EU Taxonomy

## What are environmental sustainable activities?



- Make a **substantial contribution** to at least one of the EU’s climate and environmental objectives, while at the same time **not significantly harming** any of these objectives.
- 6 environmental objectives
  - Climate change mitigation
  - Climate change adaption
  - Sustainable use and protection of water and marine resources
  - Transit to circular economy
  - Pollution prevention and control
  - Protection and restoration of biodiversity and ecosystems
- [Taxonomy compass](#)

**Data centres contribute substantially**

**Data centres do no significant harm**



# EU Taxonomy

Who has to apply it?



- Some companies and investors are required to disclose their share of Taxonomy-aligned activities
  - Large undertakings (exceeding at least two out of: a balance sheet total of €20 million; net turnover of €40 million; average number of employees during financial year 250)
  - Non-EU companies with substantial activity in EU market (€150 million in annual turnover in EU) and with at least one subsidiary/branch in EU
  - SMEs with securities admitted to trading on an EU regulated market
- Those who wish to benefit from sustainable finance sources (green bonds)



# EU Assessment Framework for Data Centres in the Context of Activity 8.1 in the Taxonomy Climate Delegated Act

CoC No	Name	Description	Expected Value	Framework (latest version of the standard where not)	Evidence	
9.1.2	IT Energy consumption meter	Install metering equipment capable of measuring the total energy delivered to IT systems. This may also include other power feeds where non UPS protected power is delivered to the cabinets. Note: This is required for Code of Conduct reporting.	Entire Data Centre	4	The organisation shall install metering equipment capable of measuring the total energy delivered to IT systems. According to the EN 50600-4-2 or ISO/IEC 30134-2.  Note: see cross-reference table.	Design Documents/Visual Inspection/DCIM/EMS/BMS Data
9.1.3	Room level metering of supply air temperature and humidity	Install metering equipment at room level capable of indicating the supply air temperature and humidity for the IT equipment.	Entire Data Centre	2	The organisation shall install metering equipment at room level in the computer room space capable of indicating the supply air temperature and humidity for the IT equipment. According to the EN 50600-2-3 or ISO/IEC 22237-4.  Note: see cross-reference table.	Design Documents/operation and maintenance documents/Visual Inspection/DCIM/EMS/BMS Data
9.1.4	CRAC / CRAH unit level metering of supply or return air temperature	Collect data from CRAC / CRAH units on supply and return (dependent upon operating mode) air temperature.	Entire Data Centre	3	The organisation shall collect data from CRAC / CRAH units on supply and return (dependent upon operating mode) air temperature. According to the EN 50600-2-3 or ISO/IEC 22237-4.  Note: see cross-reference table.	Design Documents/operation and maintenance documents/Visual Inspection/DCIM/EMS/BMS Data

## Gather & Monitor Environmental Information



SmartSensors accurately report critical environmental conditions affecting IT equipment and help you follow ASHRAE guidelines.

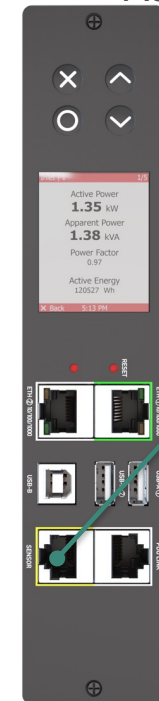
- Obtain the right insight to drive strategic decisions
- Increase response time to remediate critical risks
- Ease commissioning with its plug-and-play connection to the Rack PDU's Sensor port



DATA CENTER SOLUTIONS



±0.5% Metering Accuracy



**Sensor Port**  
Allows plug-and-play deployment of Legrand® SmartSensors™ — up to 32 sensor functions or up to 12 sensor packages supported



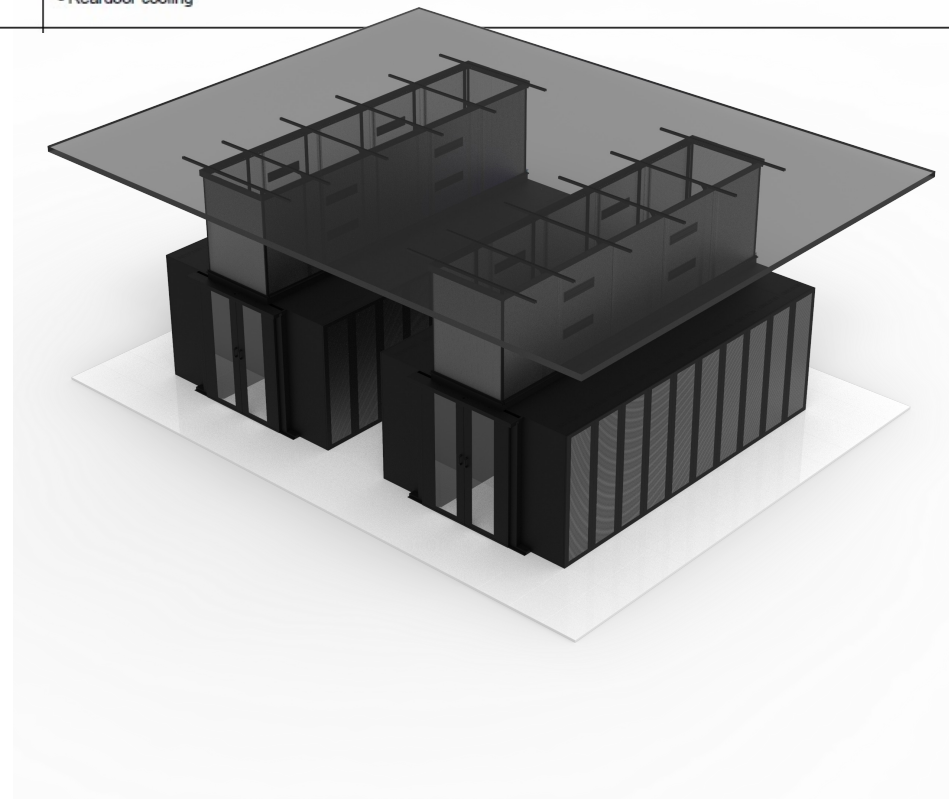
# EU Assessment Framework for Data Centres in the Context of Activity 8.1 in the Taxonomy Climate Delegated Act



DATA CENTER SOLUTIONS



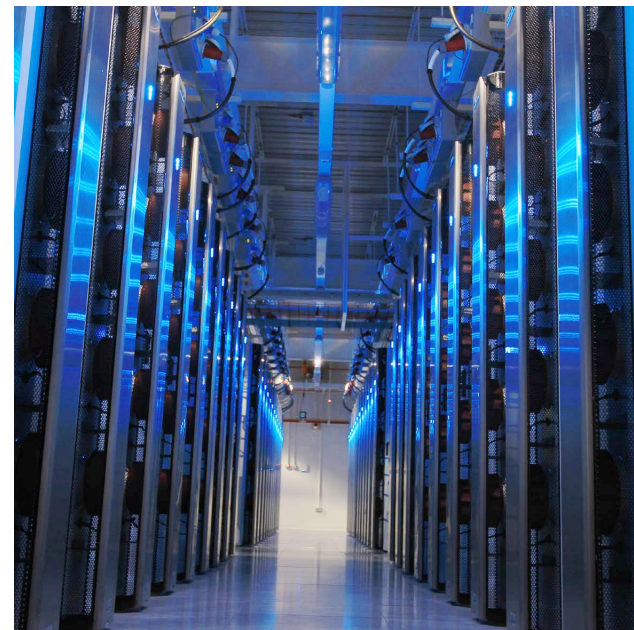
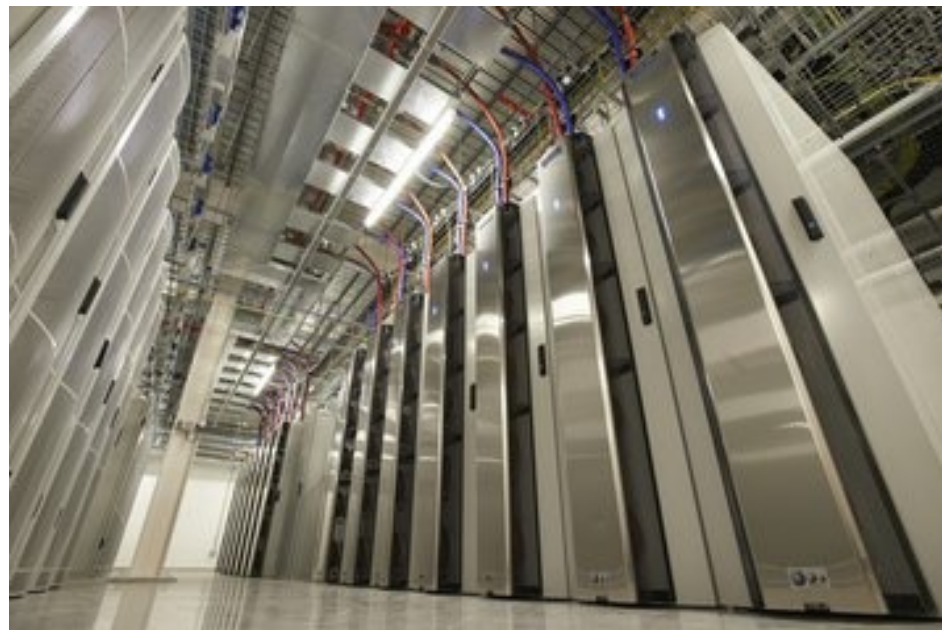
CoC No	Name	Description	Expected	Value	Framework (latest version of the standard where not specified)	Evidence
5.1.2	Design – Contained hot or cold air	There are a number of design concepts whose basic intent is to contain and separate the cold air from the heated return air on the data floor; - Hot aisle containment - Cold aisle containment - Contained cabinet supply, - Contained room return and room supply. - Contained cabinet return, and cabinet chimneys. - Contained cabinet supply, Contained cabinet return. Note: Failure to contain air flow results in both a reduction in achievable cooling efficiency and an increase in risk. Changes in IT hardware and IT management tools mean that the airflow and heat output of IT devices is no longer constant and may vary rapidly due to power management and workload allocation tools. This may result in rapid changes to data floor airflow pattern and IT equipment intake temperature which cannot be easily predicted or prevented. This Practice supersedes Practice 5.1.1 when implemented.	New build or retrofit	5	The organisation shall adapt these data centre design concepts that contain hot and cold air.  Note: Examples include: - Hot aisle containment - Cold aisle containment - Contained cabinet supply, - Contained room return and room supply. - Contained cabinet return, and cabinet chimneys. - Contained cabinet supply, Contained cabinet return - Reardoor cooling	Approved data centre operation procedures document, data from BMS, EMS and DCiM if in use, physical inspection and updated Design documents



# EU Assessment Framework for Data Centres in the Context of Activity 8.1 in the Taxonomy Climate Delegated Act



CoC No	Name	Description	Expected	Value	Framework (latest version of the standard where not specified)	Evidence
5.4.2.5	Select systems which facilitate the use of "Free Cooling"	Cooling designs should be chosen which allow the use of as much "Free Cooling" as is possible according to the physical site constraints, local climatic or regulatory conditions that may be applicable. Select systems which facilitate the use of free cooling. In some data centres it may be possible to use direct or indirect air side free cooling. Others may not have sufficient available space and may require a chilled liquid cooling system to allow the effective use of economised cooling.	New build or retrofit	5	The organisation shall choose cooling designs which allow the use of as much free cooling as possible with respect to physical site constraints, local climate or applicable regulatory conditions.	Design documents/DCiM/EMS/BMS Data



# EU Taxonomy

## What is the EU Taxonomy?

- Taxonomy Regulation = classification system for economic activities
  - Goal: Guide investors towards environmentally sustainable activities
- Taxonomy Climate Delegated Act = Technical Screening Criteria



It is...	It is not...
<ul style="list-style-type: none"><li>• A classification system</li><li>• A yardstick to direct financing toward environmentally sustainable activities</li></ul>	<ul style="list-style-type: none"><li>• A mandatory list of economic activities for investors to invest</li><li>• A list of mandatory requirements on environmental performance for companies</li></ul>

# EU Assessment Framework for Data Centres in the Context of Activity 8.1 in the Taxonomy Climate Delegated Act



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**Assessment Framework for Data Centres in the Context of Activity 8.1 in the Taxonomy Climate Delegated Act**

**Author:**  
Bertoldi Paolo

The Assessment Framework is based on The European Code of Conduct for Energy Efficiency in Data Centres. This document compliments the CoC Best Practices Document by making the Practices more requirement based rather than recommendations. The Assessment Framework therefore provides auditors with the necessary tools to verify whether a data centre correctly applies the Practices contained within the Code of Conduct. Thus, it allows market players to correctly complete their disclosures for Taxonomy alignment as part of their non-financial reporting without any ambiguity.

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Assessment Framework for Data Centres in the Context of Activity 8.1 in the Taxonomy Climate Delegated Act

2023



# EU Energy Efficiency Directive

## Erkende maatregelenlijsten (EML 2023)



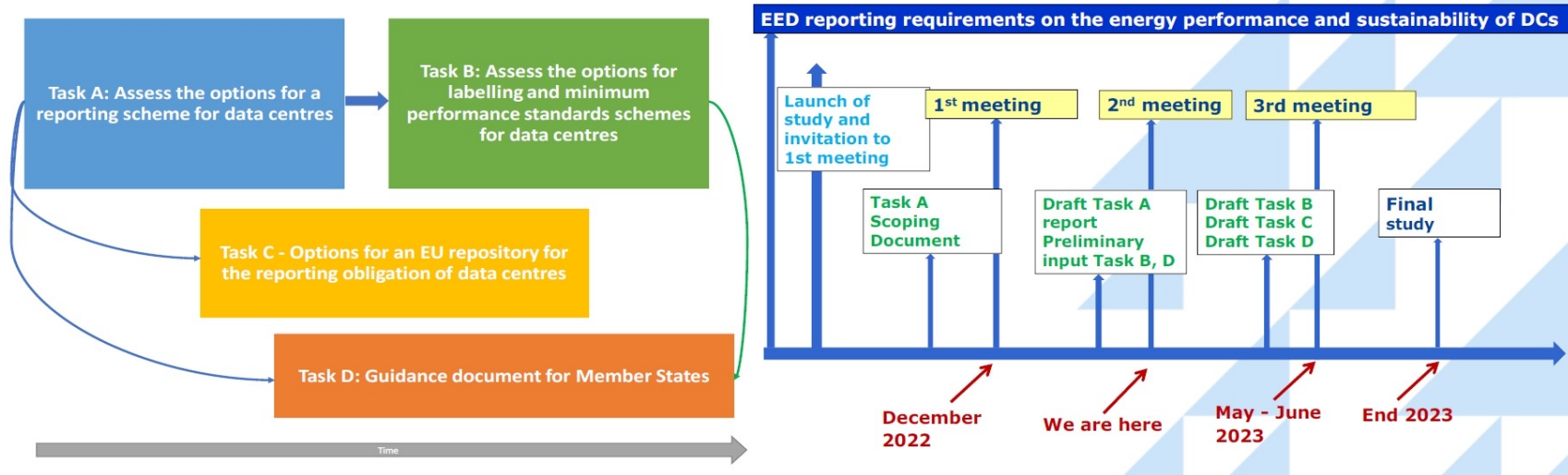
Applicable	Erkende Maatregel	Approved Measures
FI1	Serverruimte <b>Pas virtualisatie en consolidatie toe bij servers</b>	<b>Apply virtualization and consolidation to servers</b>
FI2	Serverruimte <b>Stel geautomatiseerd energiebeheer in op servers</b>	<b>Set up automated power management on servers</b>
FI3	Serverruimte <b>Neem een laagbelaste Uninterrupted Power Supply (UPS) uit bedrijf</b>	<b>Decommission a low-load Uninterrupted Power Supply (UPS)</b>
FI4	Serverruimte <b>Pas een buitenluchtklep toe voor koeling van de serverruimte</b>	<b>Apply an outside air valve for cooling the server room</b>
FI5	Serverruimte <b>Pas een energiezuinige koelinstallatie toe voor de koeling van serverruimten</b>	<b>Apply an energy-efficient cooling system for cooling server rooms</b>
FI6	Serverruimte <b>Breng een scheiding aan tussen de koude aanvoerlucht en de warme afvoerlucht in de datazaal</b>	<b>Separate the cold supply air from the warm exhaust air in the data room</b>
PH1	Datacentrum <b>Stel een hogere koeltemperatuur in voor de koeling van servers.</b> De setpoint van de zaalkoelers is minimaal gelijk aan de bovengrens van de door ASHRAE aanbevolen temperatuur van 27 °C bij gebruik van compressiekoeling of natte koeling.	<b>Set a higher cooling temperature for server cooling.</b> The set point of the room coolers is at least equal to the upper limit of the ashrae recommended temperature of 27 °C when using compression cooling or wet cooling.
PH2	Datacentrum <b>Pas een frequentieregelaar toe om het vermogen van de zaalkoelers te beperken</b>	<b>Apply a variable frequency convertor to limit the power of the room coolers</b>
PH3	Datacentrum <b>Pas vrije koeling toe bij de koelinstallatie in het datacentrum</b>	<b>Apply free cooling at the cooling installation in the data center</b>

# EU Energy Efficiency Directive



## Overview of the study

- **General objective:** support of the introduction in the EED provisions (Commission proposal for an EED recast) of **reporting requirements on the energy performance and sustainability of data centres**
- **Structured in 4 main tasks**



# EU Energy Efficiency Directive



## Scope of the reporting obligations

### IT power demand threshold from EED proposal (amendment from rapporteur )

- *Without prejudice to paragraphs 1 to 9 of this Article, Member States shall require, by 15 March 2024 and every year thereafter, owners and operators of every data centre in their territory **with an installed IT power demand equal to or greater than 500kW**, until this is superseded by the minimum threshold to be defined pursuant to Article 31(3), to make publicly available the information set out in part 2 of Annex VI (‘Minimum requirements for monitoring and publishing the energy performance of data centres’)*
- **Addition to the EED proposal:** colocation data centres will be within the scope of the reporting obligations if the sum of the installed power demand of all their customers is equal or greater than 500kW

# EU Energy Efficiency Directive



20.9.2023

EN

Official Journal of the European Union

L 231/49

## Article 12

### Data centres

1. By 15 May 2024 and every year thereafter, ~~Member States shall require owners and operators of data centres in their territory with a power demand of the installed information technology (IT) of at least 500kW, to make the information set out in Annex VII publicly available, except for information subject to Union and national law protecting trade and business secrets and confidentiality.~~
2. Paragraph 1 shall not apply to data centres used for, or providing their services exclusively with the final aim of, defence and civil protection.
3. The Commission shall establish a European ~~database on data centres that includes information communicated by the obligated data centres in accordance with paragraph 1. The European database shall be publicly available on an aggregated level.~~
4. Member States shall ~~encourage owners and operators of data centres in their territory with a power demand of the installed IT equal to or greater than 1 MW to take into account the best practices referred to in the most recent version of the European Code of Conduct on Data Centre Energy Efficiency.~~
5. By 15 May 2025, the Commission shall assess the available data on the energy efficiency of data centres submitted to it pursuant to paragraphs 1 and 3 and shall submit a report to the European Parliament and to the Council, accompanied, where appropriate, by legislative proposals containing further measures to improve energy efficiency, including establishing minimum performance standards and an assessment on the feasibility of transition towards a net-zero emission data centres sector, in close consultation with the relevant stakeholders. Such proposals may establish a timeframe within which existing data centres are to be required to meet minimum performance.

# EU Energy Efficiency Directive



## ANNEX VII

### MINIMUM REQUIREMENTS FOR MONITORING AND PUBLISHING THE ENERGY PERFORMANCE OF DATA CENTRES

The following minimum information shall be monitored and published with regard to the energy performance of data centres referred to in Article 12:

- (a) the name of the data centre, the name of the owner and operators of the data centre, the date on which the data centre started its operations and the municipality where the data centre is based;
- (b) the floor area of the data centre, the installed power, the annual incoming and outgoing data traffic, and the amount of data stored and processed within the data centre;
- (c) the performance, during the last full calendar year, of the data centre in accordance with key performance indicators about, inter alia, energy consumption, power utilisation, ~~temperature set points, waste heat utilisation, water usage and use of renewable energy, using as a basis, where applicable, the CEN/CENELEC EN 50600-4 'Information technology – Data centre facilities and infrastructures', until the entry into force of the delegated act adopted pursuant to Article 33(3).~~

# EU Energy Efficiency Directive



## Scope of the reporting obligations

- **Public information:**
  - Data Centre Name / ID (except in some situations, as explained in the rationale)
  - Location (except in some situations, as explained in the rationale)
  - Type of Data Centre according to classification in section 5
  - Total DC energy consumption
  - ICT equipment energy consumption
  - Annual water input
  - Energy reused
  - Temperature of waste heat
  - Renewable energy consumption
- **Non-public information**
  - Type of Building: stand-alone or enclosed in a larger building
  - Building floor area
  - Data Centre floor area
  - Year Constructed or Renovated
  - Reporting organisation domain of control (indicate yes or no)
  - Operation elements
  - ICT capacity
  - Server utilisation
  - Server age



# TS 50600 Maturity Model for Energy Management and Environmental Sustainability

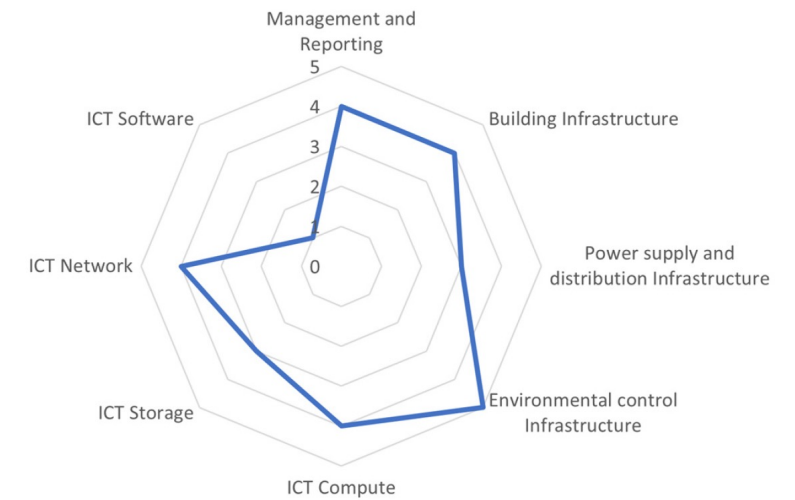
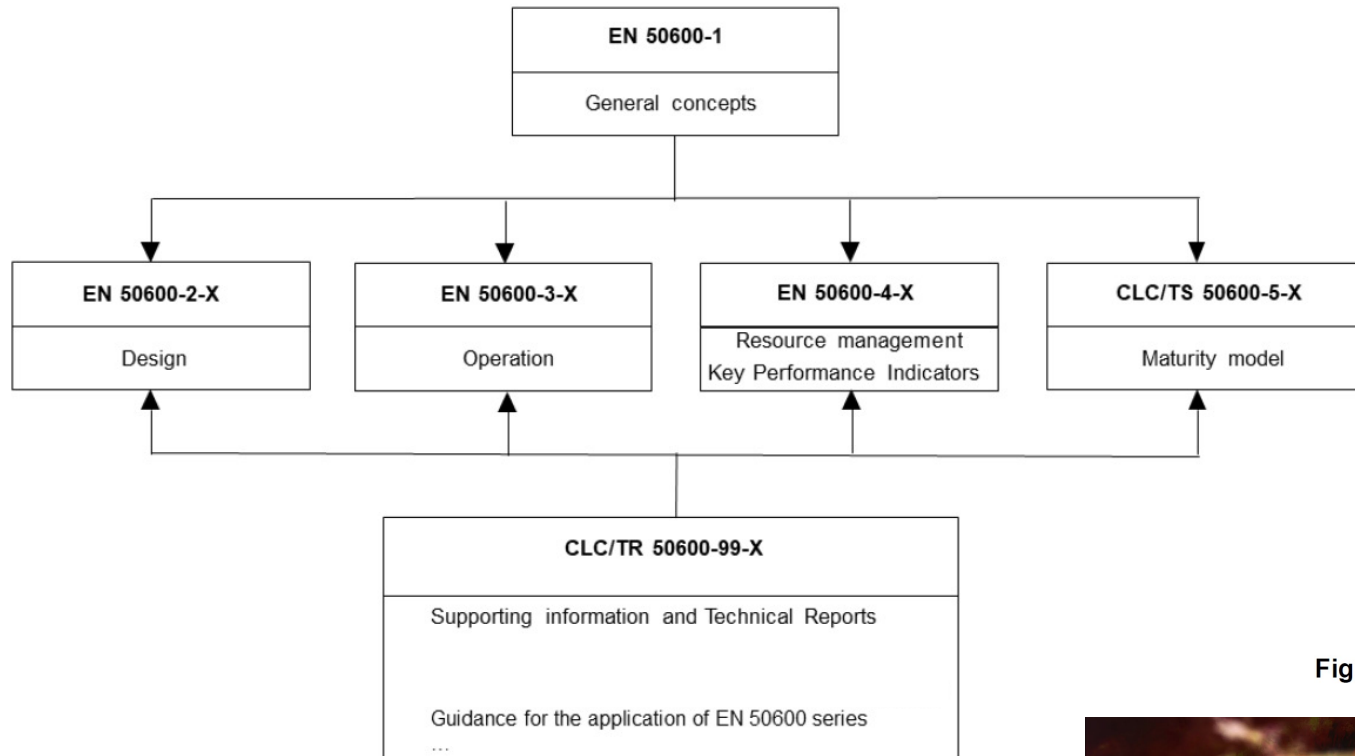


Figure 2 — Example of the graphical representation of data centre maturity elements



# Questions - Discussion

