This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101048703.

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Energy performance and waste heat utilisation in data centres

WG7.1

Domain 3: Data centres (Art. 12, Annex VII)
Domain 5: Heating and cooling supply (Art. 26)

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CA EED 3, PM7, Cyprus, 23rd October 2025

Data Centres & Waste Heat in Europe: Context and Challenge

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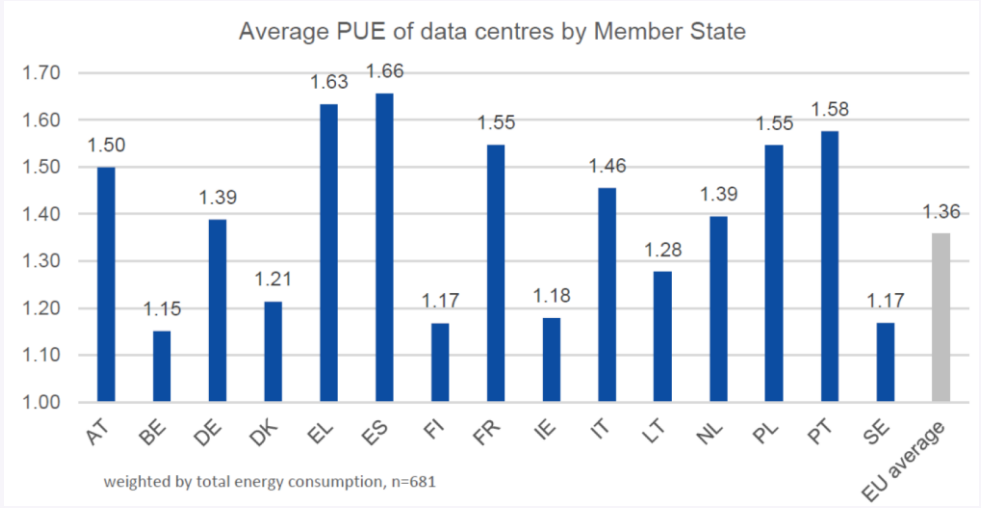
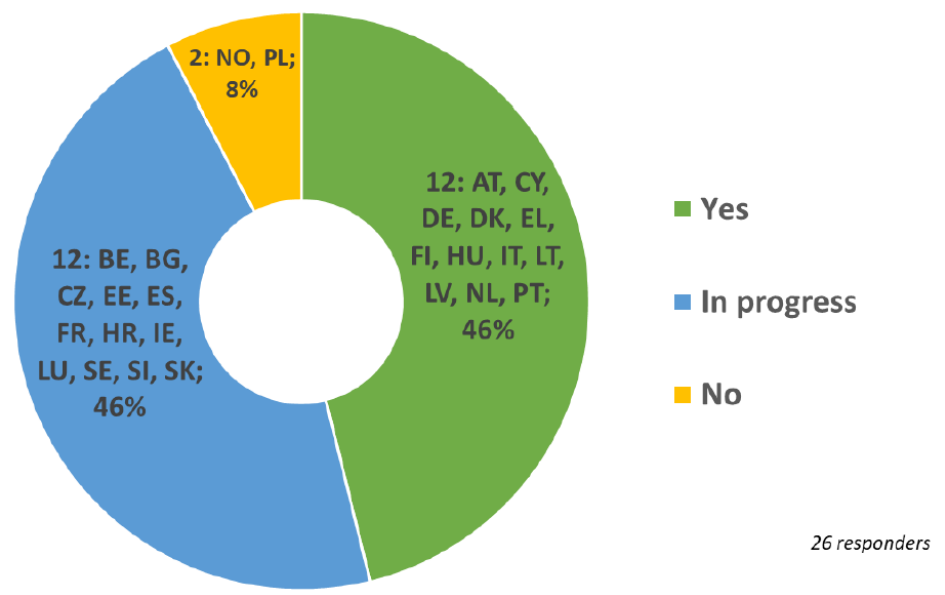
- Data centres (DC) are critical for Europe's digital economy but energy intensive (96 TWh/a or 3% of EU´s electricity demand).
- Projected to more than double by 2030 due to digitalisation and AI growth.
- Waste heat utilisation from DC is up to 90% potentially recoverable and low grade heat (30-50° C), but faces technical, economic and organizational barriers.
- Most efficient ways of reusing waste heat are for the heating supply in nearby buildings directly after pre-heating and for supplementing district-heating networks.
- Many DC operate above the widely accepted Power Usage Effectiveness (PUE) benchmark of 1,3 - 1,4.

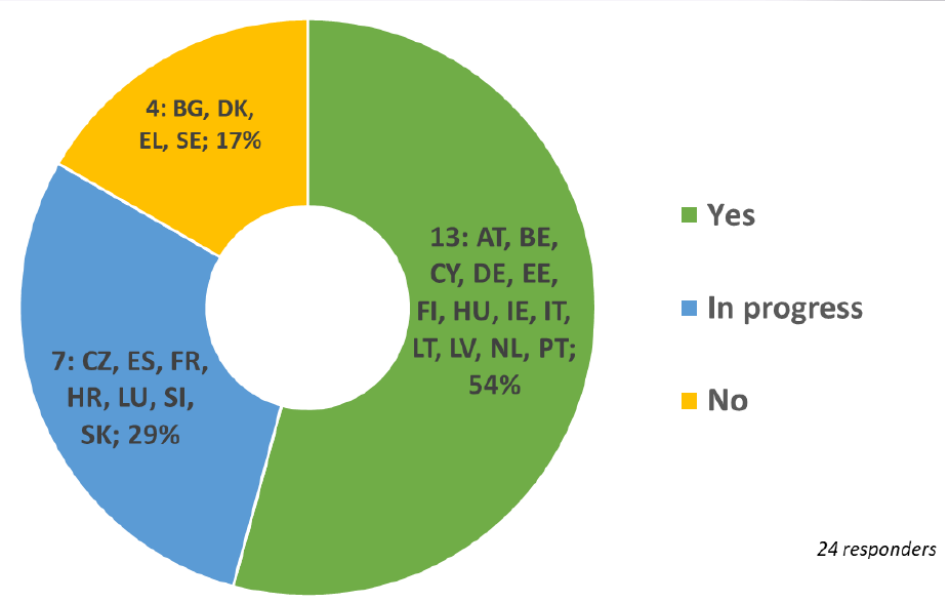


Source: EC – DG ENER: Assessment of the energy performance and sustainability of data centres in EU – First technical report, 2025 https://data.europa.eu/doi/10.2833/3168794

Transposed Article 12 (1) and applied exceptions of Article 12 (1 & 2)



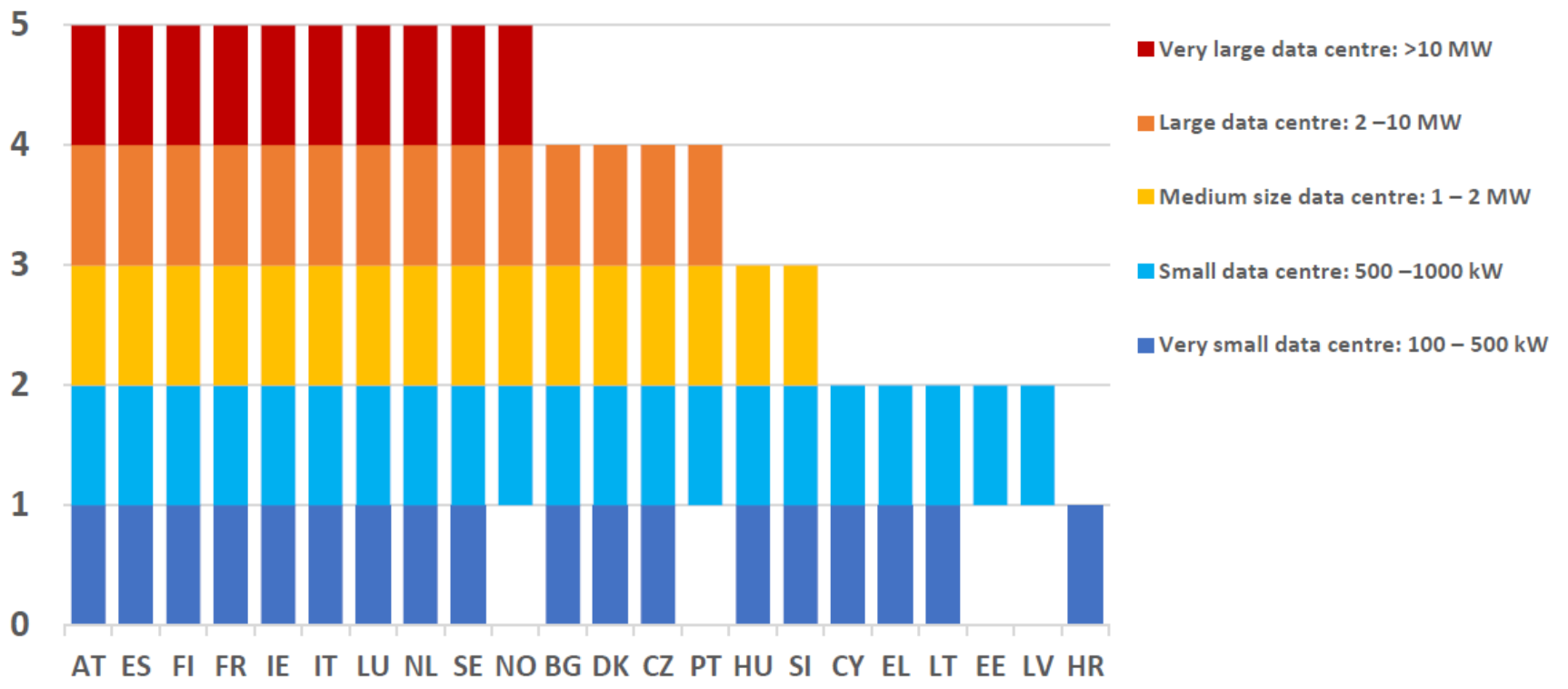
Source: Working Group Document 7.1: Question 1



Source: Working Group Document 7.1: Question 1b

- Half (12 MS) have transposed the provisions of Art 12 (1), while other half is in progress (left figure).
- NO/PL not, while DC in NO have to share similar information with authorities but not to publish them.
- Reported examples (right figure) of exceptions: (1) Defence, civil protection, and national security purpose; (2) trade and business secrets or confidential data and (3) critical infrastructure-related functions.

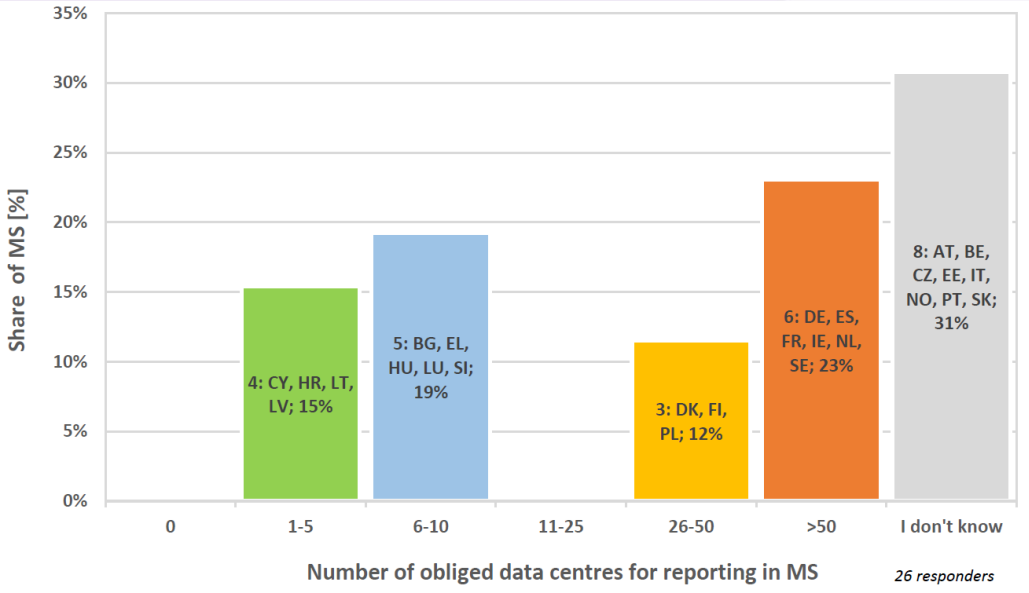
Size categories of data centres



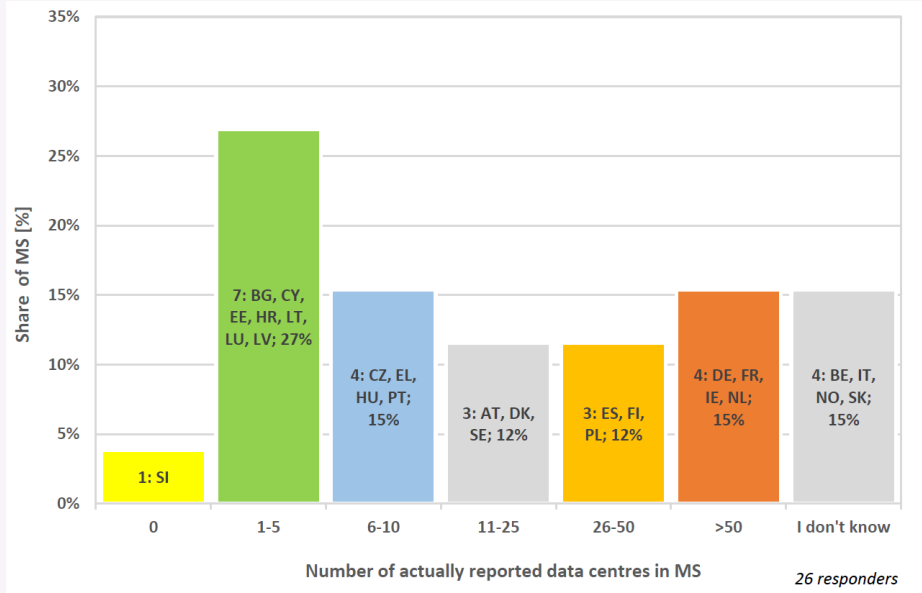
Source: Working Group Document 7.1: Question 2

- 9 MS (AT, ES, FI, FR, IE, IT, LU, NL, SE) have all size categories.
- LV and EE have only small, while HR with only very small data centres, which don't need to report.
- Energy performance important for ¾ of MS due to rising energy demand and climate targets.

Obliged and actual reporting DC



Source: Working Group Document 7.1: Question 3a



Source: Working Group Document 7.1: Question 3b

- 1/3 of MS have not identified DC, but >50 identified in DE, ES, FR, IE, NL, SE, while actual reporting is lower.
- DE expects most DC (~500-1000), while low number in CY, HR, LT, LV (1-5).
- Application of best practices of European Code of Conduct on DC EE (Art 12(4)) unaware by majority (15 MS), while 5 MS applied it and 6 MS are in progress.

Common challenges identified by MS

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- **Identifying all obliged data centres**, especially those over the 500kW threshold and distinguishing ownership or operational structures.
- **Data access:** Some operators, especially colocation and co-hosting centres, lack access to necessary data held by customers.
- **Platform and procedural issues:** Complicated reporting procedures, platform access, and registration difficulties.
- **Consistency and confidentiality:** Differences in interpreting indicator definitions, reporting reluctance, and issues with marking data as confidential.
- **Technical complexities:** Difficulty in understanding and reporting on specific KPIs (e.g., PPA, renewable energy, data traffic) and quantifying relevant consumption metrics.
- **National adoption lag:** Not all Member States have established national reporting systems or fully transposed the Directive.

CBA on Data centres exceeding 1 MW

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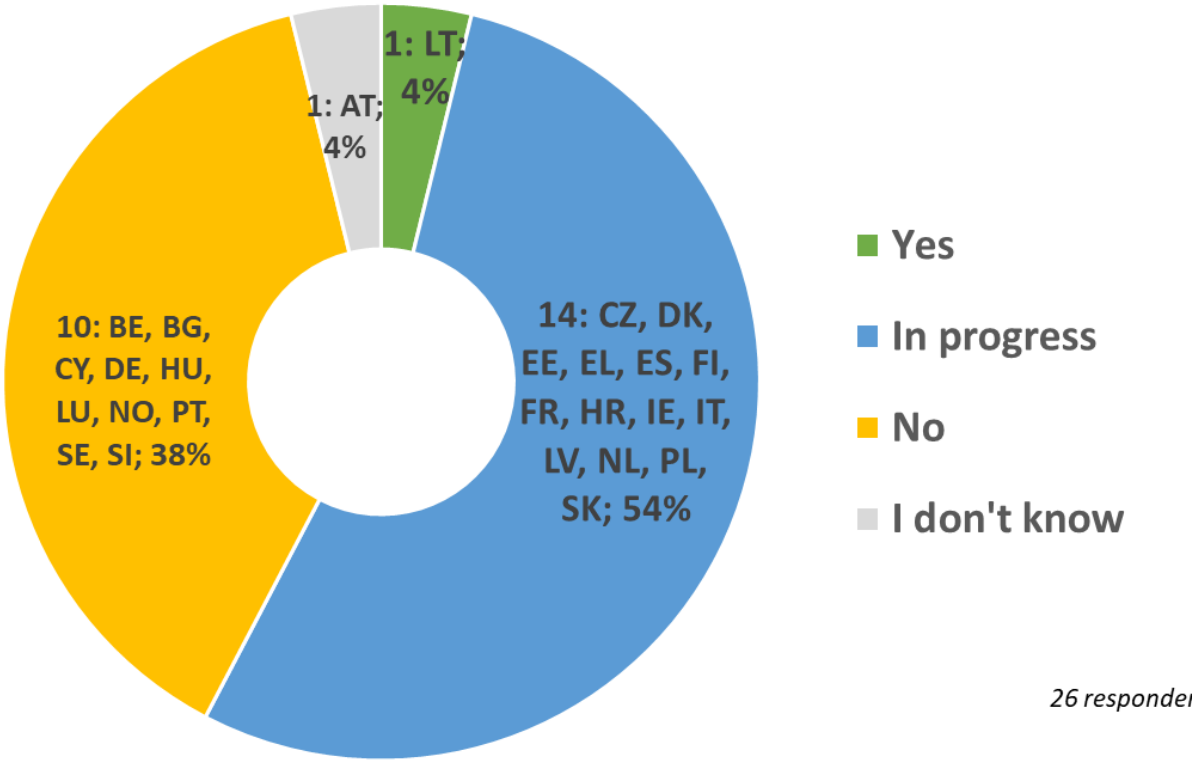
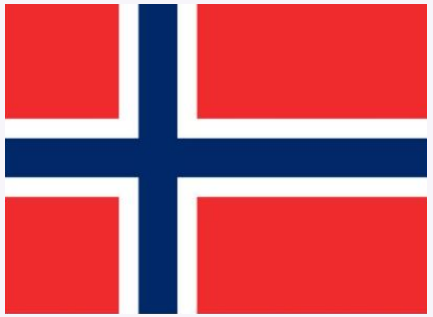
Have you already transposed new provisions of Article 26 (7d) and Annex XI ?

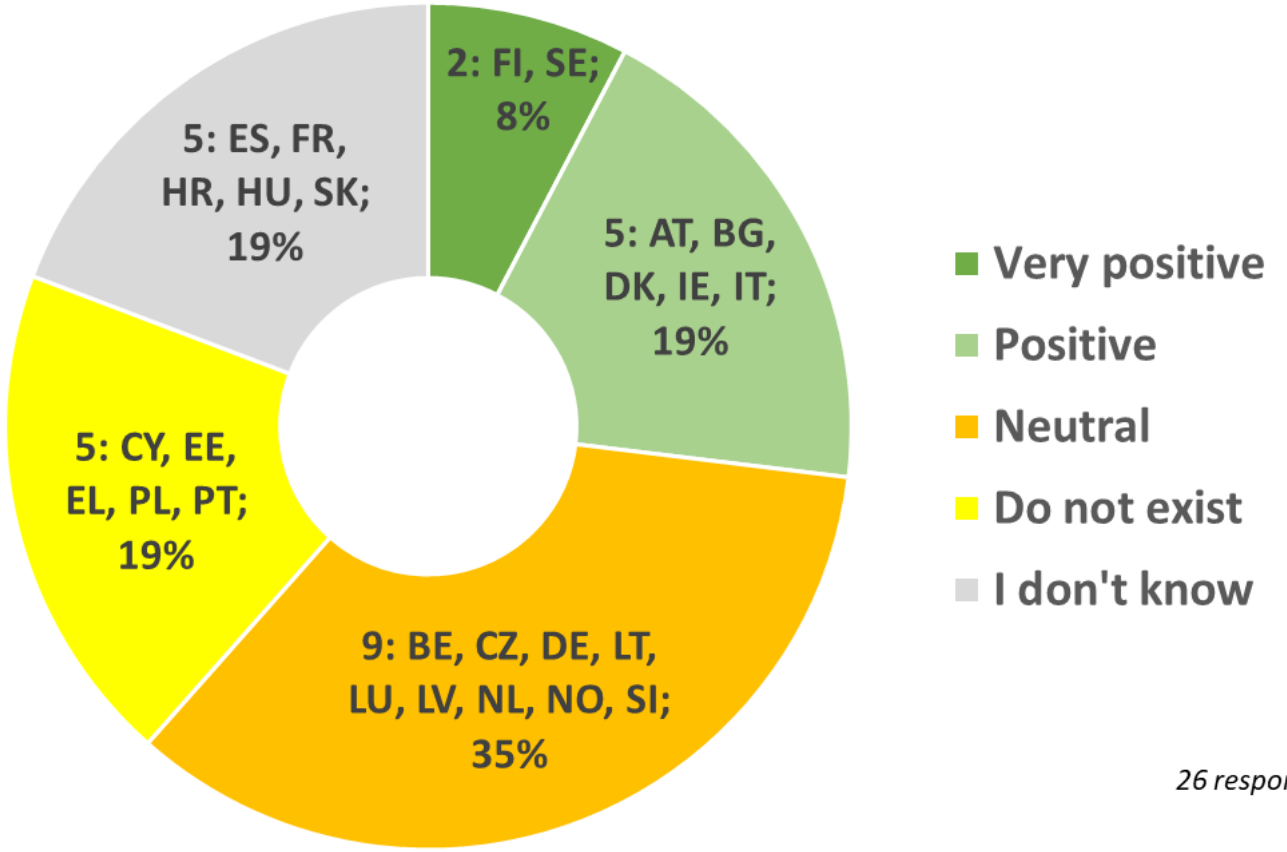


Already transposed!



Implemented first CBA!

Experience with the waste heat utilisation from DC?



- **Practical examples – linked to MS with district heating infrastructure, favourable policies or active pilot projects**
- **Barriers - include location mismatch, infrastructure needs, economic feasibility and technical constraints.**
- **Momentum is building in Poland, Latvia and Norway, with prominent or pilot projects showing potential.**

Existing or planned support for the waste heat utilisation from DC?

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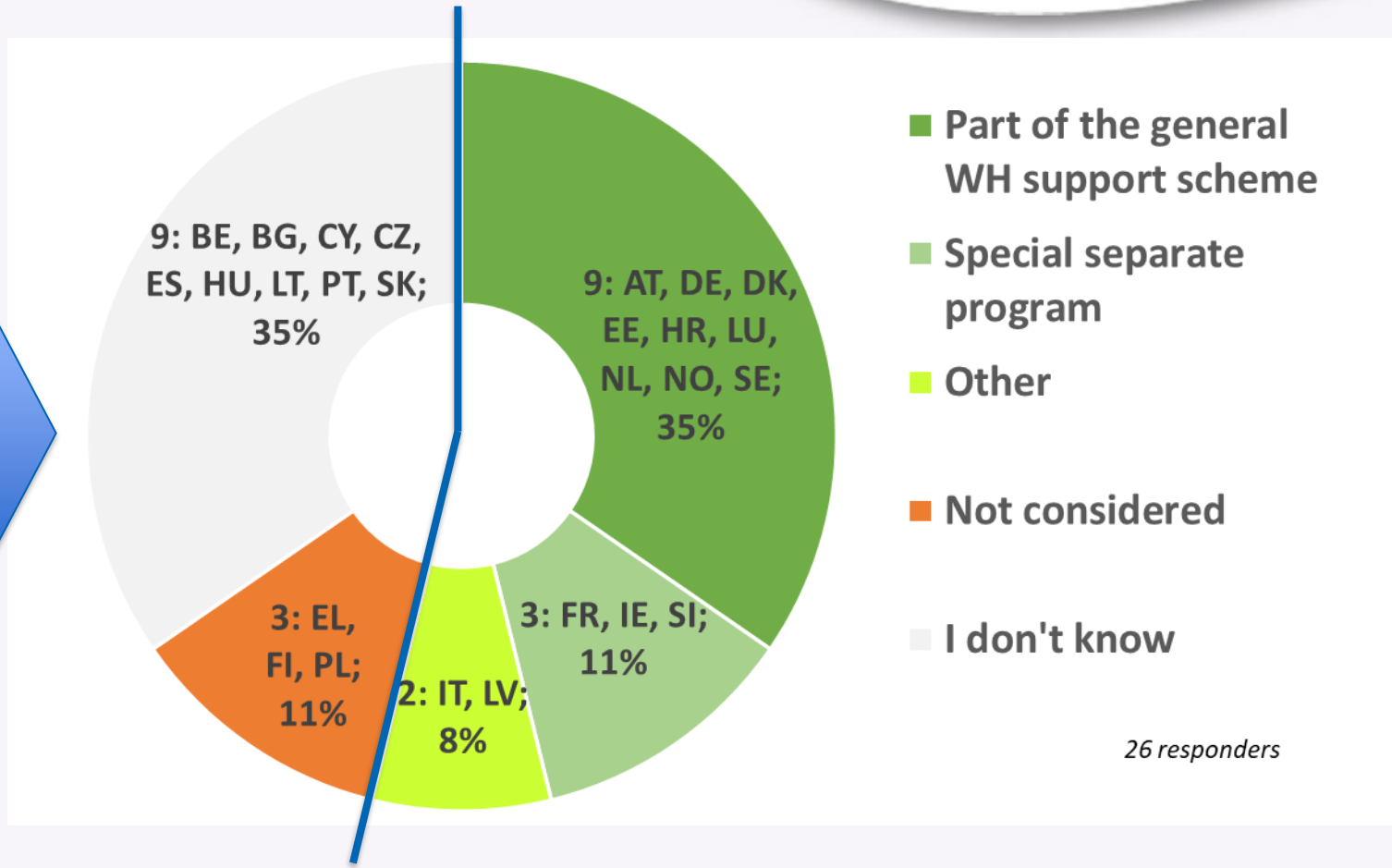
- **>50% already in place**
- 1/3 Under consideration



Welcome on WG7.1 sessions!

Today : 13:30 – 17:00 Akamas B

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Session 1:

Energy performance of data centres

DG ENER: Policy & results of the assessment of the energy performance and sustainability of DC

MS policy good practice exchange:

Session 2:

Waste heat utilisation from DC

WH from DC - factors that influence utilisation/usability, obstacles and success factors in practice
Life project ***Support DHC***

Group work and discussion

Thank you for your attention

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