GÉANT

COMPENDIUM OF NATIONAL RESEARCH AND EDUCATION NETWORKS IN EUROPE 2025

COMPENDIUM OF NATIONAL RESEARCH AND EDUCATION NETWORKS IN EUROPE

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www.compendium.geant.org

Abstract

The GÉANT Compendium provides an authoritative reference source for anyone with an interest in the development of research and education networking in Europe and beyond. Published since 2001, the Compendium provides information on core areas such as NREN budget, staffing, end users, services, and network traffic.

This Report covers key developments in the period January to December 2025 through Spotlight articles on particular NRENs, and should be viewed in conjunction with the GÉANT NREN Compendium data website at: www.compendium.geant.org/data.

Authors

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Introduction

Research and Education Networks (RENs) are specialist internet service providers that run communication networks dedicated to supporting the needs of the scientific and academic community. On the scale of countries, they are called National Research and Education Networks (NRENs).

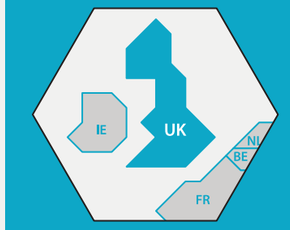
43 European NRENs and RENs are interconnected by the pan-European GÉANT network, the largest and most advanced research and education (R&E) network in the world.

The purpose of the GÉANT Compendium of National Research and Education Networks is to provide annual insights into the landscape of GÉANT's member and associate member NRENs. Each NREN has its own distinct identity, shaped by differences in national role and mandate, governance structures, history, and organisational culture. At once, the Compendium reflects this diversity while also highlighting that, despite these differences, all European NRENs are built around the delivery of a shared set of interconnected core services.

The 2025 Compendium Survey was open from late October to December 2025, with 41 of GÉANT's member and associate member NRENs completing the Survey; a very high response rate. As always, no questions are mandatory, so it should be borne in mind when reading some of the graphs and charts in this Report that the total number of responding NRENs will not always reach the full 41. The Survey responses were published online[1] on 12 February 2026 to ensure that the most up-to-date information about Europe's NRENs was made available without delay. However, the raw data and results don't always tell the full story. This Compendium Report seeks to fill in the stories behind the data: to allow NRENs to set the context and give their reasoning behind major year-on-year changes in their own words.

While the continuity of asking the same questions over many years is a great strength of the Compendium, allowing us to see how the world of European NRENs changes and evolves, it is also essential to make updates and add new questions to maintain relevance. The always-popular "Organisation" section has been expanded to include more questions on the methods of funding NRENs, and relatedly, their expenditure, alongside new questions about NREN employees, including gender and age groups, which are the subject of Spotlight articles in this Report. New sub-sections on EOSC involvement and artificial intelligence have also been added to both the Compendium Survey and this Report, as befitting quickly developing areas of interest for the NREN community.

1. compendium.geant.org/data

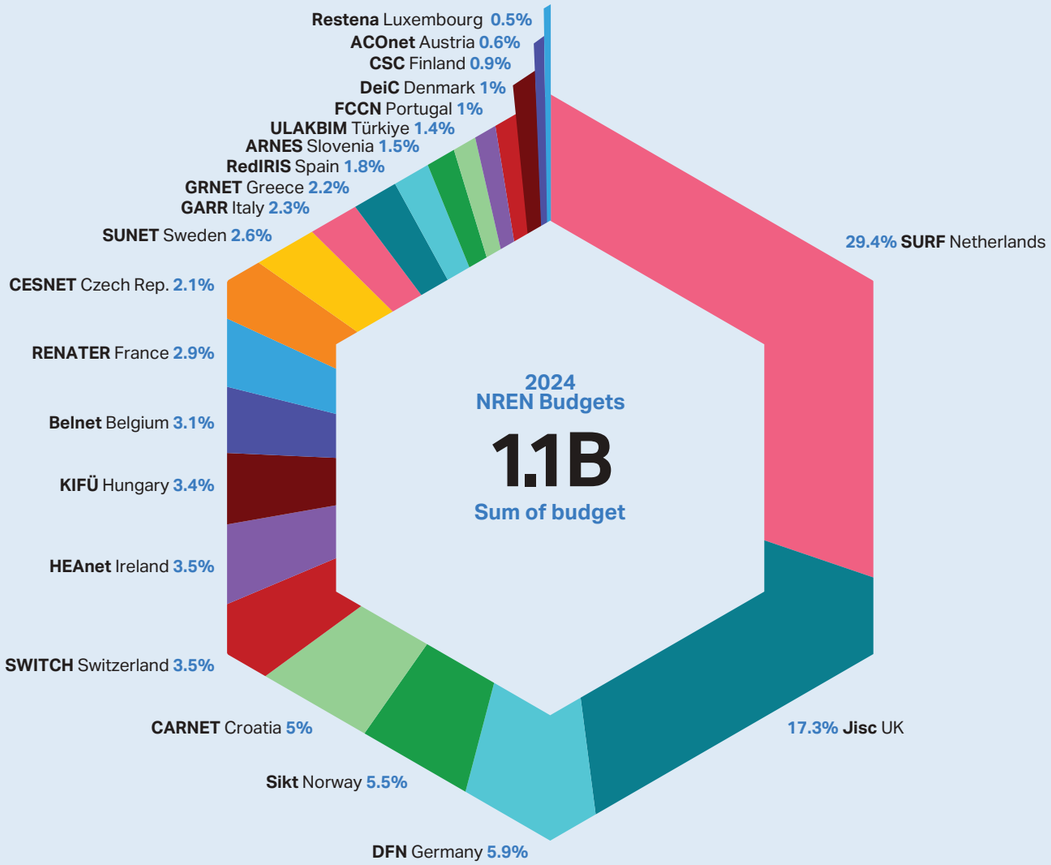


The 2024 Compendium debuted this new style of Report, focused on exploring the individual NREN stories behind the data. In a further small evolution, this 2025 Report has been greatly assisted by the Jisc Market Analysis and Insight team, who interviewed "Spotlighted" NRENs, writing up their responses.

One of the perennial dilemmas of the Compendium is the ambiguity hidden within seemingly simple questions. On the surface, asking the annual budget of an NREN seems uncomplicated. However, in deciding how to respond, some NRENs struggle to quantify "NREN activity" versus the work they do outside of running a research and education (R&E) network: NREN remits are broad and endlessly varied, with no two the same. Equally, we ask about the staff gender in two broad realms, technical and non-technical staff roles; however, this does not always match up precisely with internal data collection. Guidance is provided, and the Compendium team seeks to navigate the process with sensitivity and decisiveness, but this is no replacement for the in-depth explanations provided by this Report.

This Compendium Report is the result of a collective effort from across the GÉANT community. From CEOs to network engineers, and from technical specialists to communications professionals, the Compendium team would like to extend sincere thanks to everyone who contributed their time to complete the Compendium Survey and share their insights. Particular appreciation goes to the authors of the Spotlights, without whose time and insights the Report could not be written.

1. Organisation
1.1 Budget



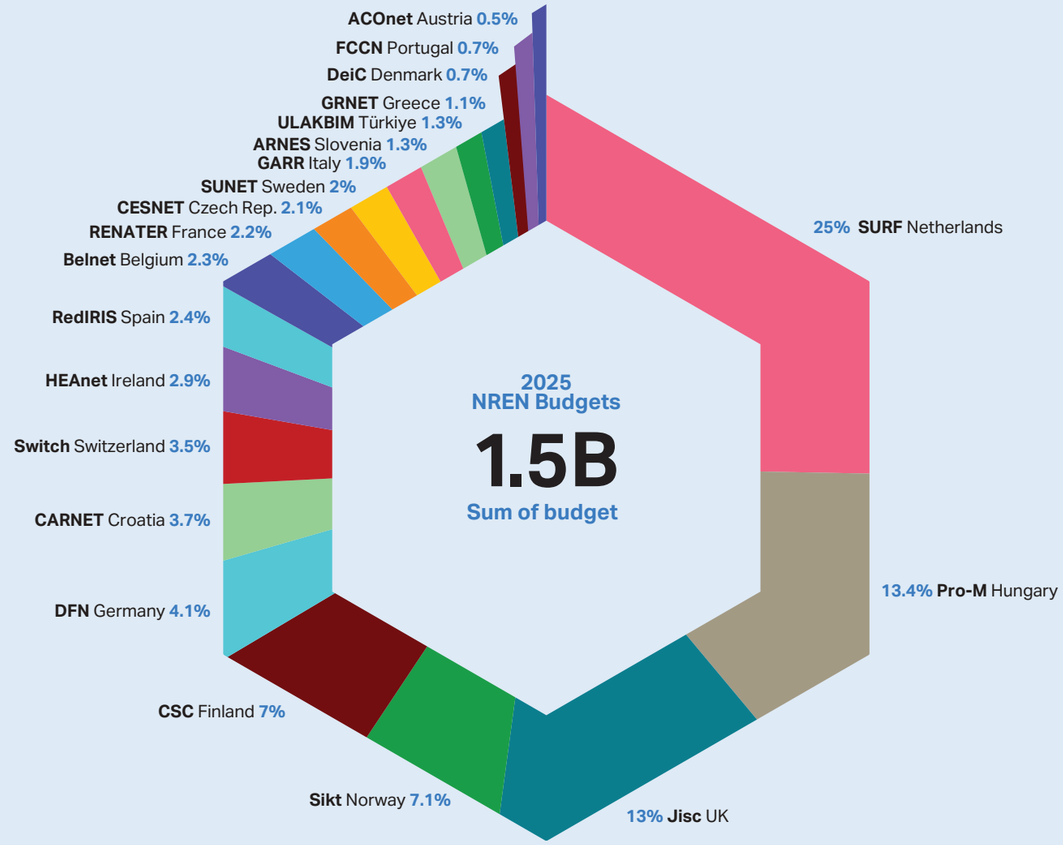


FIGURE 1.1
Sum of NREN budgets and share of total budget per NREN (EUR, 2024–25)

The combined budget of the NRENs who provided data in the 2025 Compendium Survey is around EUR 1.5B, a substantial increase compared with the figure for 2024. It should be noted, however, that this does not include the budgets of those NRENs not sharing this information publicly. Looking at the reported figures, the budgets and staffing rates of two NRENs in particular – Pro-M from Hungary, and CSC from Finland – have noticeably increased between the 2024 and 2025 Surveys, although the underlying reasons are quite different. Other NRENs (Sikt, SURF and RedIRIS) also saw notable budget increases, however, this was not the case across the entire community, with some NRENs' budgets not keeping up with inflation, or indeed seeing some small decreases.

The Spotlight articles in the coming pages reveal the importance of context – the impact that organisational change, or simply changes in reporting methods, can have on the headlines and figures. This underlines the value of looking deeper for the story behind the numbers.

Values below 0.5% are not shown in the graphs

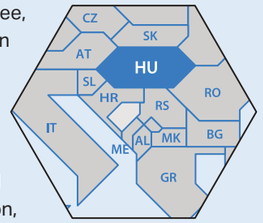
2024
0.3% SANET Slovakia, AMRES Serbia, KREN Kosovo* | 0.2% RoEduNet Romania
0.1% GRENA Georgia, AzScienceNet Azerbaijan, ASNET-AM Armenia, MARnet North Macedonia, RASH Albania, CYNET Cyprus, LAT Latvia, EENet Estonia | 0.0% MREN Montenegro, URAN Ukraine, RENAM Moldova

2025
0.4% Restena Luxembourg | 0.3% IUCC Israel | 0.2% AMRES Serbia, LITNET Lithuania | 0.1% SANET Slovakia, LAT Latvia, EENet Estonia, RENAM Moldova, RASH Albania, RoEduNet Romania, CYNET Cyprus, GRENA Georgia
0.0% URAN Ukraine, ASNET-AM Armenia, AzScienceNet Azerbaijan, MARnet North Macedonia, KREN Kosovo*, MREN Montenegro, BREN Bulgaria

**This designation is without prejudice to positions on status and is in line with UNSCR 1244 and the ICJ opinion on Kosovo Declaration of Independence*

From KIFÜ to Pro-M: The Transfer of NREN Functions to a New Organisation

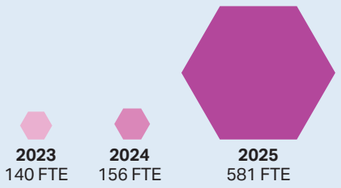
— Janos Mohacsi, Head of International Research and Innovation, **Pro-M** Hungary



Due to a Ministerial Decree, KIFÜ, the former Hungarian NREN, was dissolved at the end of 2024, and from 1 January 2025, many of its former staff, activities and infrastructure moved to a different organisation, Pro-M.

An established government service provider, Pro-M has a background in radio and mobile telephony for the emergency services, alongside other network services. Throughout 2025, Pro-M further consolidated several state-owned network infrastructures, including HBONE+, Hungary's optical backbone network serving the research, development, and academic community (i.e., the Hungarian NREN). However, not all former KIFÜ activities were transferred; key areas such as supercomputing and certain data-centre services were assigned to other organisations.

FIGURE 1.3
KIFÜ / Pro-M's staff numbers, 2023–25



This merging of the NREN into another, larger organisation with a diversified and expanded mandate has, naturally, had an impact on the responses to the Compendium Survey.

As can be seen in the graphs, the overall budget and staffing levels have increased significantly between 2024 and 2025, though this does not imply that the budget or manpower available for what could be termed "core NREN activities" has shifted dramatically.

KIFÜ's dissolution did not cause any technical disruption to the Hungarian NREN – Pro-M took over NREN functions (albeit without services such as high-performance computing (HPC)), but this shifted the balance from research-driven experimentation and innovation to a more stability-focused, state-operated logic. The new structure requires more coordination between development-operations (Pro-M), policy / funding actors, and research stakeholders.

FIGURE 1.4
KIFÜ / Pro-M's budgets, 2023–25

The success of Pro-M as the Hungarian NREN largely depends on maintaining living links with the research community to ensure effective coordination in the new institutional landscape and keep the NREN aligned with European collaborative models. For GÉANT and the broader NREN community, the key lesson is that structural reforms should preserve strong research-community governance and coordination mechanisms, since operational continuity alone may not be sufficient to sustain innovation, alignment, and effective international R&E collaboration.

FIGURE 1.2
NREN budgets for 2025 normalised to GDP and population

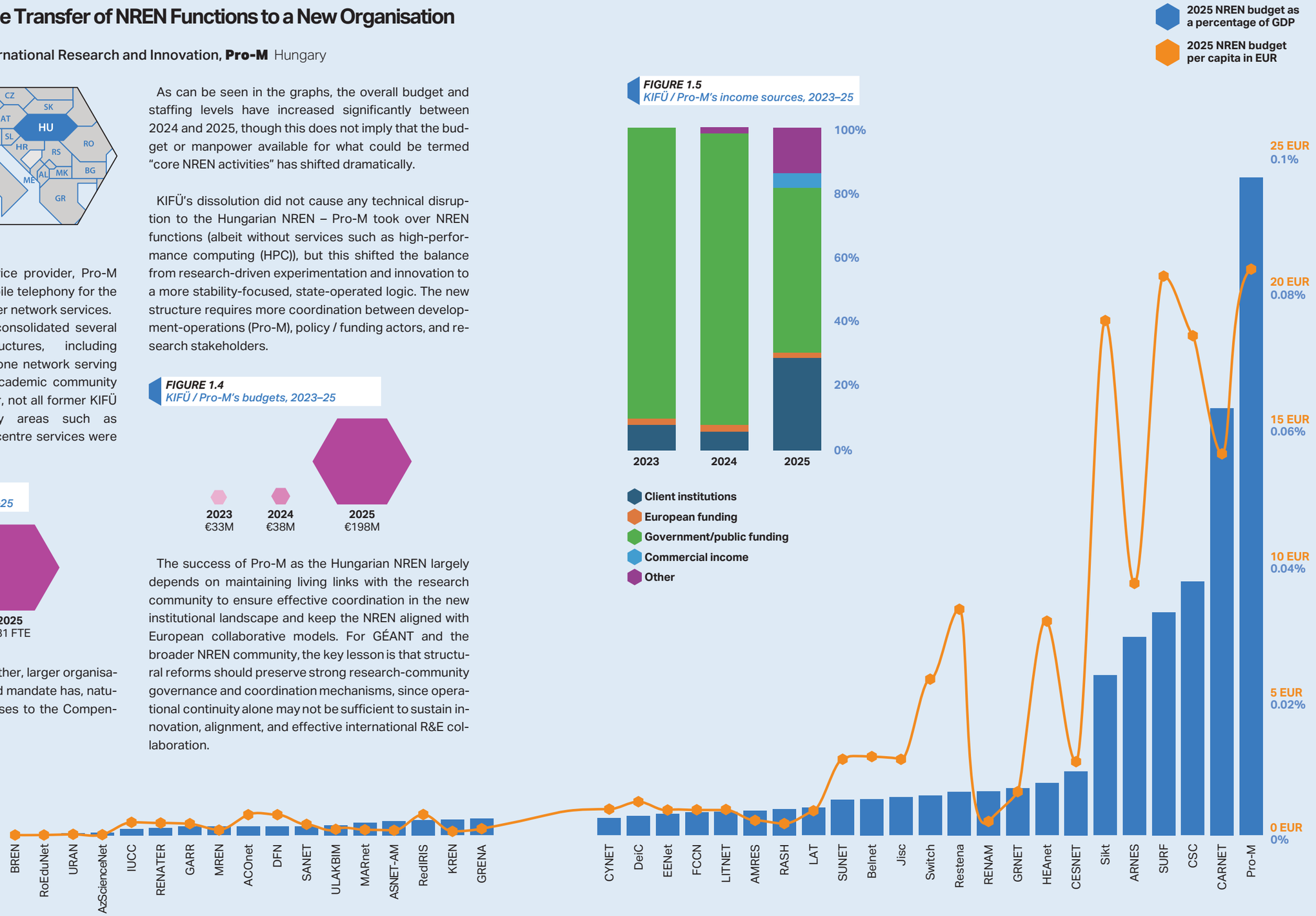
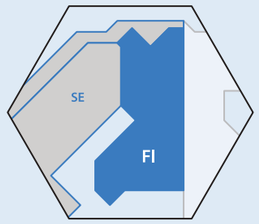


FIGURE 1.5
KIFÜ / Pro-M's income sources, 2023–25

CSC: Reflecting the Reality of a Modern NREN in Compendium Reporting

— Greg Goodey, Research Manager, **Jisc** UK
— Harri Kuusisto, FUNET Development Manager, **CSC** Finland
— Juha Oinonen, FUNET Director, **CSC** Finland



In the 2025 GÉANT Compendium Survey, Finland's entry reflects a notable shift in how CSC – the Finnish IT Centre for Science – reports its scale and activity.

For the first time, CSC has presented budget and staffing figures at the level of the organisation as a whole, rather than isolating those associated specifically with FUNET, its national R&E network service.

In earlier years, Compendium responses from Finland were prepared using a hybrid approach. Networking-related questions were typically answered on behalf of FUNET, while other sections drew on CSC's wider activities. While workable at the time, this split became increasingly difficult to sustain.

CSC's portfolio is extensive, encompassing not only network services but also high-performance computing, data management, identity federation and participation in major European initiatives. As a result, separating "core NREN" activity from the rest of the organisation came to feel less representative of how services are delivered in practice.

The evolving structure of the Compendium itself also influenced the timing of the change. In recent years, questions have increasingly focused on organisations rather than narrowly defined networks, reflecting the broadened scope of NRENs across Europe.

For CSC, continuing to report FUNET in isolation risked presenting an incomplete picture, particularly where services rely on shared infrastructure, staff and governance arrangements across the organisation. Reporting at CSC level brings greater consistency to headline indicators such as total budget and headcount.

The shift has also highlighted some of the practical realities of organisation-wide reporting. While aggregated figures could be supplied more accurately at CSC level, some more detailed information that had previously been straightforward to provide for a small FUNET team – such as workforce breakdown – was not readily available in a form aligned with the Survey. In these cases, CSC chose to leave responses blank rather than rely on estimates. The experience illustrates the growing importance of coherent and transparent data coordination as organisations expand, particularly as reporting requirements continue to evolve.

More broadly, the change illustrates how the role of the NREN has evolved. CSC did not begin as a networking organisation alone, but as a national computing centre, and today networking sits alongside compute, data and user support within an integrated national digital infrastructure. For Compendium readers, the updated reporting offers a clearer view of that reality, while also underscoring the ongoing challenge of representing complex, multi-service NRENs in a consistent and comparable way across Europe.

FIGURE 1.6
FUNET / CSC's budget in EUR, 2023–25

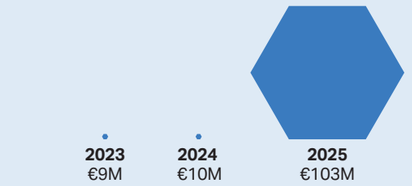
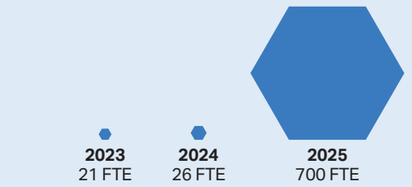


FIGURE 1.7
FUNET / CSC's staffing levels, 2023–25

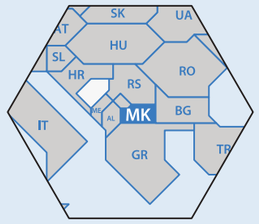


1.2 Funding & Income

The Compendium Survey asks NRENs about the source of their funding, broken down into five possible categories. Receiving funding primarily from either client institutions or the government/public bodies is most common. The impact of European funding on NREN budgets differs widely across the community, and as the graph shows, the percentage of NREN income from commercial activities also varies, with many NRENs not getting any income of this sort, while others, like MARnet, the subject of our Spotlight, receive over 50% of their funding this way.

MARnet: The Story Behind Our Commercial Income Stream

— Charles Hutchings, Head of Market Research and Insight, **Jisc** UK
— Vladislav Bidikov, CEO, **MARnet** North Macedonia



Among Europe's NRENs, MARnet stands out for the unusually large proportion of its income derived from commercial sources; 59% in 2025, greater than peers such as Luxembourg's Restena (37%) or Switzerland's SWITCH (30%) and significantly above the average of 6% across all 40 NRENs responding to the question in this year's Compendium Survey. This distinctive financial profile is rooted in MARnet's history, mandate, and the structural constraints shaping its operations.

The core driver of this commercial share is MARnet's stewardship of North Macedonia's national .mk and national IDN .мкд domains. Since its establishment as a governmental NREN, management of the top-level domain has been a central component of MARnet's remit. MARnet is legally restricted from selling domains to private individuals or companies. Instead, it authorises commercial resellers who deliver domain services to the wider market. Revenues originate from domain registration fees – EUR 10 for new registrations and EUR 5 for renewals – which collectively generate around EUR 160,000 annually. These funds flow into a designated government-controlled account intended to support MARnet's services and infrastructure.

Regardless of the amount accumulated each year from domains, MARnet typically receives only 20–30% of this, resulting in a steady but modest income stream to supplement direct government funding. With only 10% of its budget available for infrastructure running costs, with 90% of the current budget allocated to salaries, and only three employees with no dedicated IT staff, MARnet faces challenges around its capacity to scale, modernise, or fully exploit the opportunities its commercial income could support.

Looking ahead, however, MARnet has aspirations to use whatever accessible funding it receives to embark on a period of upgrade and potential expansion. A key priority is connecting the remaining public North Macedonian universities—currently only one, Ss. Cyril and Methodius University of Skopje, is fully connected—before extending services to the country's elementary and high schools. As the network grows, MARnet anticipates introducing new services such as protective DNS, DDoS mitigation, and other cybersecurity measures, ideally by the middle years of the newly appointed CEO's five-year mandate (2025–30).

Past collaborations with regional NRENs including GRNET (Greece), RASH (Albania), and AMRES (Serbia) have demonstrated how valuable wider community engagement can be in driving progress. A combination of persistence, a clear and sustained vision, and ongoing collaboration between NRENs will be essential to turn MARnet's plans into reality.

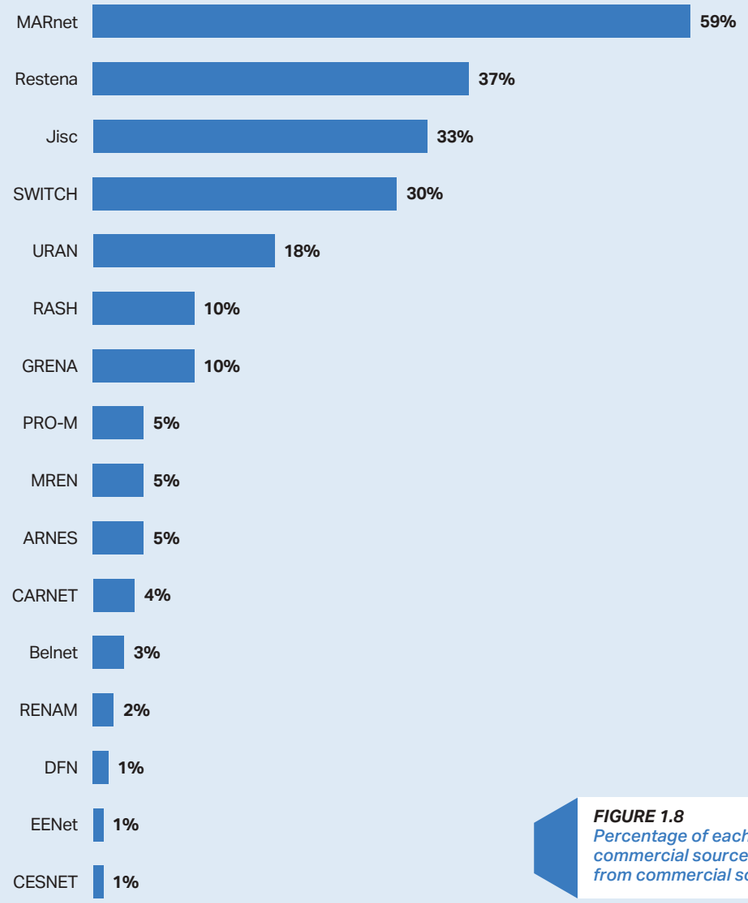


FIGURE 1.8
Percentage of each NREN's income from commercial sources (NRENs reporting no income from commercial sources are not displayed)

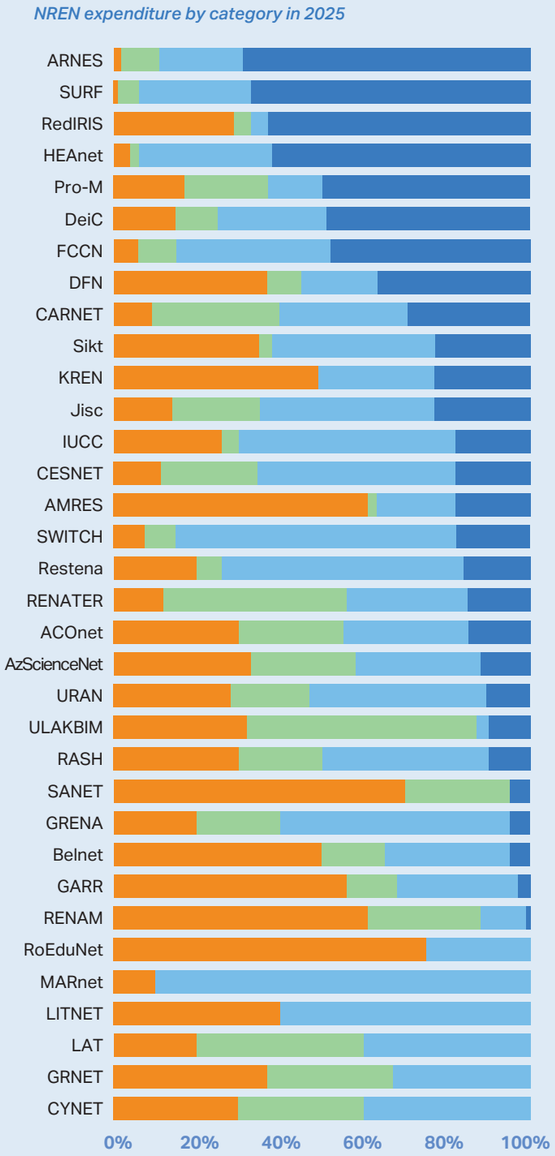
1.3 Expenditure

The 2025 GÉANT Compendium Survey reintroduced a question on NREN expenditure patterns that previously appeared between 2005 and 2015. While the raw data from many early Compendium Surveys has now been lost, Figure 1.9 reproduces the breakdown of NREN expenditure as published in the 2005 Compendium Report.

It is interesting to note the substantial shift in spending patterns over the intervening 20 years, as well as the changing names of NRENs over time. The last two decades have seen many changes in the NREN world – indeed, the 2005 graph itself is taken from the TERENA Compendium of Research and Education Networks in Europe, a precursor organisation of the GÉANT we see today.

However, these naming differences do not detract from the value in tracking change over time, and exploring the insights that can be discerned as to the evolving role and remit of NRENs.

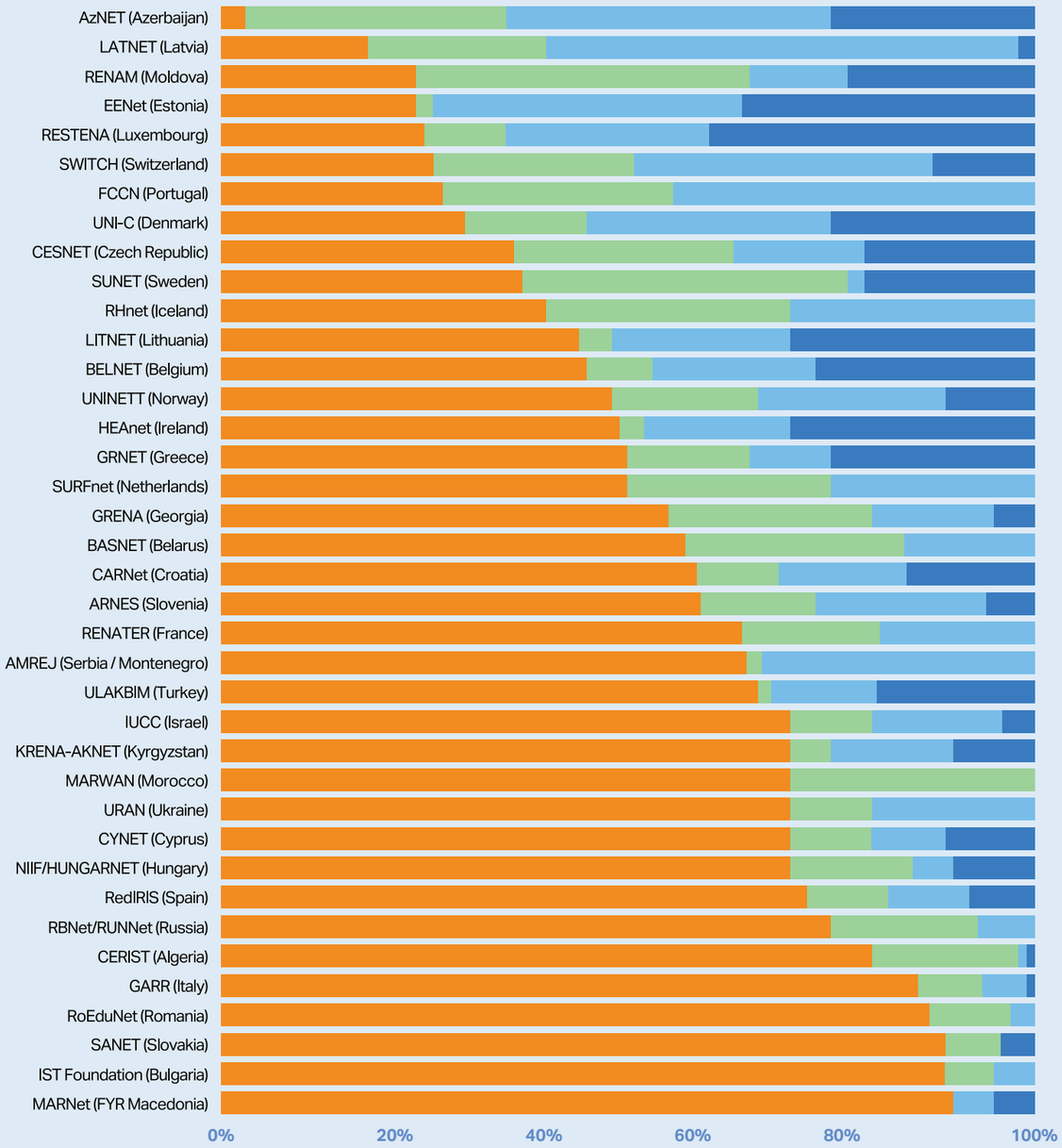
As elucidated in the HEAnet/Asiera Spotlight, the single biggest change is the growth of expenditure under "Other". Many different types of expenditure can fit within that description, something that will be fleshed out in more detail in future Compendia.



Transmission capacity
Salaries and other general costs
Equipment
Other

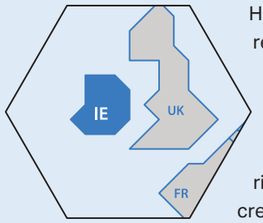
FIGURE 1.10
NREN expenditure by category, 2025

FIGURE 1.9
NREN expenditure by category, 2005 (reproduced from the TERENA 2005 Compendium of NRENs in Europe)



A Changing Balance of Expenditure: A Focus on HEAnet[2]

— Marianne Sheppard, Research Manager, **Jisc** UK
— Eoin Kenny, Innovation, Research & Development Manager, **Asiera** Republic of Ireland



HEAnet's reported expenditure shows transmission capacity declining from around 45% of total spend in 2005 to approximately 4% in 2025. Over the same period, the "Other" category increased from about 30% to 62%. This shift reflects both organisational growth and an expanding service portfolio.

Since 2005, HEAnet has grown from 45 to 80 clients, increased staffing from 27 to 118 FTE, and expanded its annual budget from EUR 12.2M to EUR 42.43M.

While the NREN's role has broadened significantly, core transmission costs—primarily long-term fibre leases—have remained relatively stable in absolute terms since 2005. The reduced prominence of these transmission costs is therefore a result of growth in other areas, rather than declining connectivity investment. Some transmission-related costs that fall outside the traditional core model are also now reported under "Other".

A major contributor to the "Other" category is HEAnet's support for connectivity to approximately 4,000 schools, with current expenditure of around EUR 13M. HEAnet chose to report these costs separately from core NREN transmission expenditure due to a perception that this could distort cross-country comparisons; it is not clear how the other NRENs providing connectivity to this sector (see pages 30-31) approached this question.

More recently, a significant increase in expenditure in 2023—around EUR 6M—was driven by the delivery of a national Security Operations Centre (SOC) and Security Information and Event Management (SIEM) service for all third-level institutions, funded directly by the government. These services are also reported under "Other" and reflect HEAnet's ambition to become a trusted security partner for Ireland's research and education sector.

Overall, HEAnet's experience highlights the evolving role of NRENs. As service portfolios expand, core transmission costs may remain stable yet become proportionally less significant.

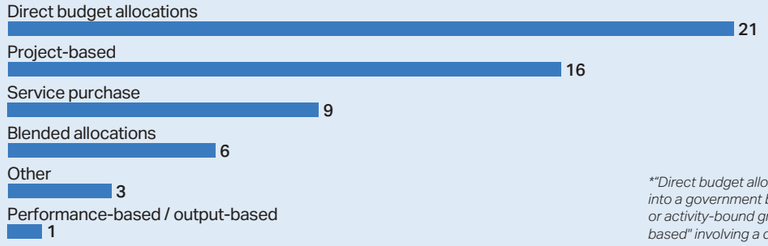
2. HEAnet formally changed its name to Asiera on 1 January 2026, but because the Compendium covers 2025, 'HEAnet' is used here.

2025 Snapshot of NREN Financing – European and National Funding

— Tanja Maier, Public Affairs Specialist, **GÉANT**

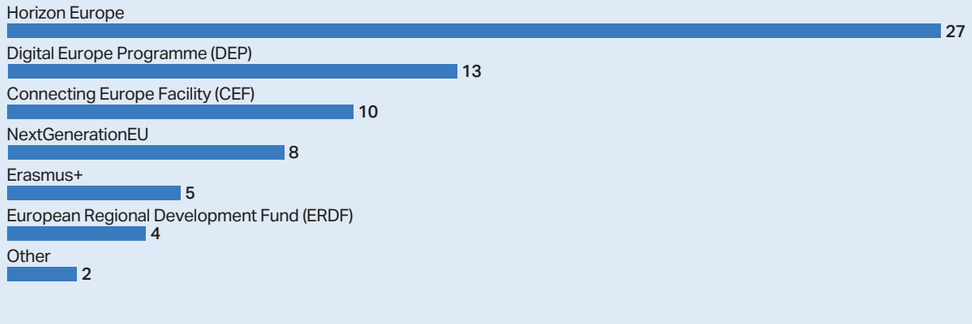
In 2025, the Compendium Survey introduced two new questions on funding. For the first time, a snapshot was created of exactly how NRENs receive government/public funding, and through which programmes NRENs receive European funding. The responses give new nuance to the diverse financial and institutional structures of NRENs. Many NRENs, though not all, receive at least part of their funding from their national government or other public bodies. Of the 33 NRENs benefiting from this type of funding, 21 have either part or all their budget directly allocated, while others receive funding for concrete projects or services. This suggests a strong link, or even institutional integration, with public administration. It also underscores the fact that many NRENs are regarded as trusted ICT partners for public service delivery by their national authorities.

FIGURE 1.11*
Numbers of NRENs in receipt of different types of government /public funding in 2025



**"Direct budget allocations" is taken to mean core funding built into a government budget. "Project-based funding" implies time- or activity-bound grants, with "performance-based/output-based" involving a direct link to results achieved by the NREN*

FIGURE 1.12
Numbers of NRENs in receipt of different EU funding streams in 2025



EU funding is another important income source for many NRENs. Beyond Horizon Europe, NRENs received funding in 2025 through the Digital Europe Programme (DEP), the Connecting Europe Facility (CEF), NextGenerationEU (NGEU), Erasmus+, and the European Regional Development Fund (ERDF)[3]. These funds are either accessed directly by the NRENs or channelled through their national governments. For example, NRENs receiving NGEU funding demonstrate close alignment with national public bodies.

Why does this income source distribution matter?

The EU is currently planning the next long-term budget, the Multiannual Financial Framework (MFF) 2028–34. A key proposal is the consolidation of the current 52 funding programmes into 16 large horizontal instruments.

While the successor to Horizon Europe is expected to be similar to the current iteration, the new European Competitiveness Fund (ECF) is expected to integrate several programmes into a single rulebook. Parts of Horizon Europe and the ECF will be closely connected, though the exact structure remains under discussion.

The ECF will offer funding rates below 100%, reinforcing co-funding requirements and exacerbating trends already seen in CEF-Digital and the DEP. To better coordinate Member-State needs and EU added value, comprehensive National and Regional Partnerships are also planned. In general, public funding sources are increasingly under pressure to tackle the current geopolitical environment and address new challenges, all while remaining within fiscal limits.

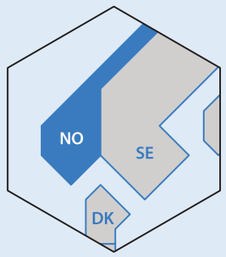
Against this backdrop, a key challenge for GÉANT and the NRENs is to deliver on policy priorities and secure sustainable financing. In this context, it is essential to understand the NRENs' income composition and the role of EU and national public funding.

3. Horizon Europe, DEP, CEF, and Erasmus+ set different rules for the participation of non-EU27 countries. The closest form of participation is an association agreement with the given programme, but under CEF, DEP, and Horizon Europe, legal entities established in associated countries (i.e. non-EU27) might still be excluded from responding to selected calls for duly justified security reasons.
This "security clause" can be triggered in the call texts in the Work Programmes. By contrast, the NextGenEU (RRF) and ERDF are reserved for EU Member States, except for the INTERREG programme through which cross-border links may be financed. Additional programmes exist to support non-EU27 countries, but they were not part of the 2025 Compendium Survey.

1.4 NRENs & EOSC

Understanding NREN Involvement and Participation in the European Open Science Cloud (EOSC)

— Marianne Sheppard, Research Manager, **Jisc** UK
— Sigrid Gåseidnes, **Sikt** Norway
— Jan Meijer, Compendium Advisory Board Member, **Sikt** Norway



2025 marked the start of the evolution of the European Open Science Cloud (EOSC) from a project-based initiative into a federated system of national and thematic nodes known as the EOSC Federation. This shift requires technical expertise that NRENs are well placed to provide. NRENs are playing an increasingly important enabling role as this evolution of the next phase of EOSC unfolds.

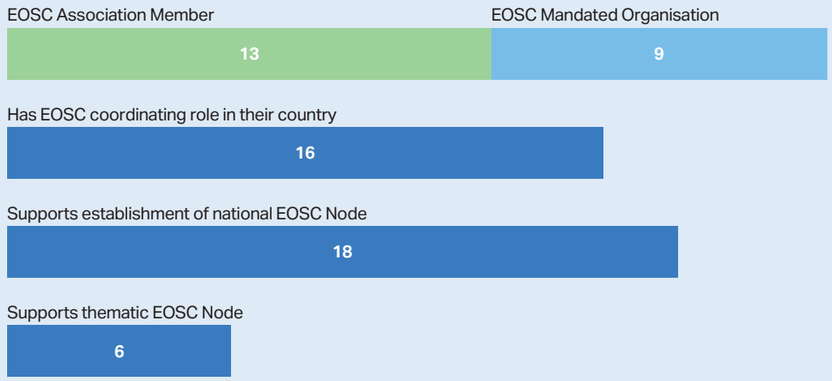
To help understand how NRENs are becoming more involved, influential and coordinated in this next phase of EOSC, the 2025 Compendium Survey included additional questions to clarify the current extent of NREN involvement in EOSC. These covered EOSC Association (EOSC-A) membership, the role that NRENs play in coordinating national alignment efforts, and the ways NRENs are supporting the development of national and thematic EOSC nodes.

72% of NRENs responding to these questions report some involvement in EOSC, reflecting the scale and significance of NREN contribution to the initiative:

- **EOSC-A involvement:** 22 NRENs are involved in the EOSC Association as Members (13) or Mandated Organisations (9) appointed by their governments to represent national interests and co-ordinate input for their different constituencies through a 'bi-directional' role.

- **Coordinating role:** 16 NRENs have a coordinating role and are a mix of Mandated Organisations (7) and Members (7) of EOSC-A, while two are non-members.
  A further six NRENs have a more indirect or collaborative involvement rather than a direct coordinating role.

FIGURE 1.13
NRENs' reported scope of involvement in EOSC.
"EOSC Association Member" and "EOSC Mandated Organisation" are mutually exclusive; NRENs cannot be both. Other categories are not mutually exclusive; individual NRENs may be represented multiple times across these categories



- **National node support:** A key phase in delivering this EOSC 'ecosystem' is underway with the establishment of national EOSC nodes – the organisational and technical entry points through which a country connects its research data, services, and infrastructures to EOSC. 18 NRENs (of which 12 are EOSC Members or Mandated Organisations) are supporting the establishment of national nodes, although only six are currently operational. This support ranges from a focus on technical aspects (e.g., network connectivity, identity federation), to engaging in broader stakeholder processes to define national node functions, to directly operating the national node. Six of these NRENs also support the thematic nodes currently in operation.

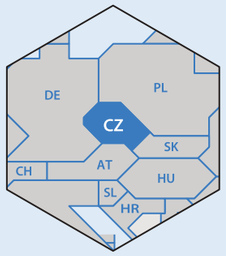
It is still early days for the development of the EOSC national nodes, with their role, modus operandi and added value still being developed. As the national nodes evolve, the learning and experience gained so far means this is a timely opportunity for the broader NREN community to discuss the potential role of NRENs in driving forward the ambitions for EOSC.

1.5 Staffing & Gender

CESNET: A Decade of Steady Workforce Growth and Generational Renewal

— Greg Goodey, Research Manager, **Jisc** UK
— Tereza Sklenářová, Head of HR Department, **CESNET** Czechia
— Radovan Igliar, Deputy Director for Services, **CESNET** Czechia

CESNET, the Czech NREN, is a Mandated Organisation within the national e-infrastructure initiative e-INFRA CZ and EOSC CZ. Its remit is to provide and operate its high-performance academic network, supporting secure access to advanced computing, data storage and communication tools for its members.



Over the past ten years of Compendium data, CESNET has recorded a steady increase in staff full-time equivalents (FTEs). When asked to comment, CESNET describes this increase as the result of long-term planning embedded within its strategic and financial management. Annual staffing levels are set in line with available funding and organisational priorities, supporting sustained growth over time. While expansion has taken place across the organisation, some areas have been prioritised. In particular, cybersecurity has seen stronger growth, reflecting evolving demands on NREN infrastructure.

Alongside overall growth, CESNET stands out in the Compendium for the age profile of its workforce. It ranks second, after RASH, in terms of the proportion of employees aged under 30. CESNET attributes this to a deliberate Human Resources (HR) strategy aimed both at organisational rejuvenation and managing personnel costs over time. Recruiting junior colleagues and supporting their development internally has enabled CESNET to build expertise aligned with its technical and operational needs while managing costs over the longer term.

Close cooperation with universities has played a central role, enabling CESNET to maintain strong links with students and early-career professionals. However, it was also noted that rapid workforce growth and the rising share of younger employees has introduced organisational challenges.

A larger number of staff—many in early-career or adaptation phases—required changes to management approaches, including clearer structures, defined objectives and revised organisational arrangements. CESNET reports introducing more formal management-by-objectives practices to support consistency and transparency as teams expanded.

At the same time, the organisation recognised the need to better understand generational differences in expectations and working styles. Situations where senior and junior colleagues struggled to align prompted targeted efforts to gather feedback from younger staff, including workshops and structured discussions, to inform adjustments to internal practices and team dynamics. These efforts have been accompanied by changes to workplace culture, including updates to working environments and management practices, intended to better support a younger workforce.

Set against the wider workforce patterns captured in the Compendium, CESNET's data shows how staffing levels and age profiles have changed alongside shifts in organisational scale and activity. The experience described reflects the interaction between long-term planning, engagement with the R&E community, and internal organisational adjustments as workforce composition evolves. CESNET's case highlights the need to continue reviewing how structures, management practices and working arrangements respond to changes in organisational size and generational profile as the NREN enters a period of consolidation and adaptation following sustained growth.

FIGURE 1.14
CESNET workforce levels, 2016–25

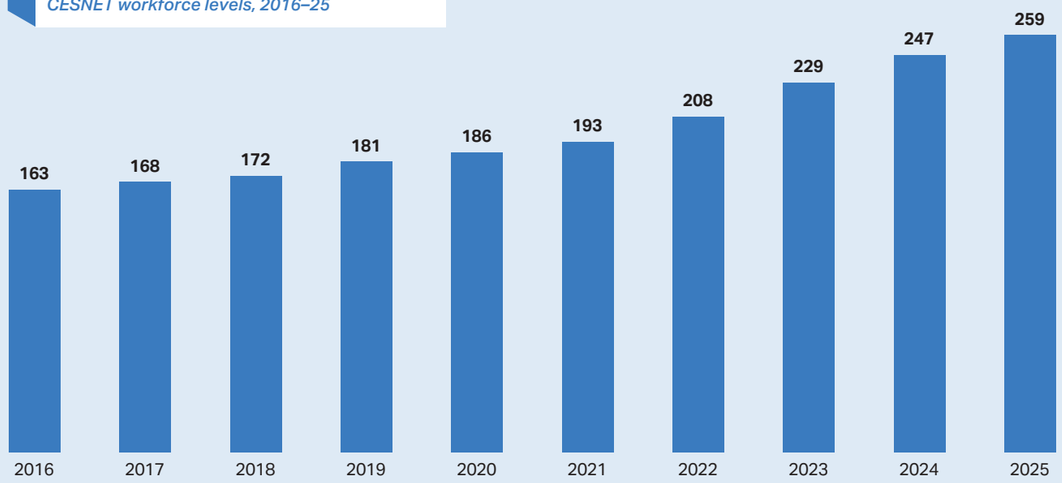
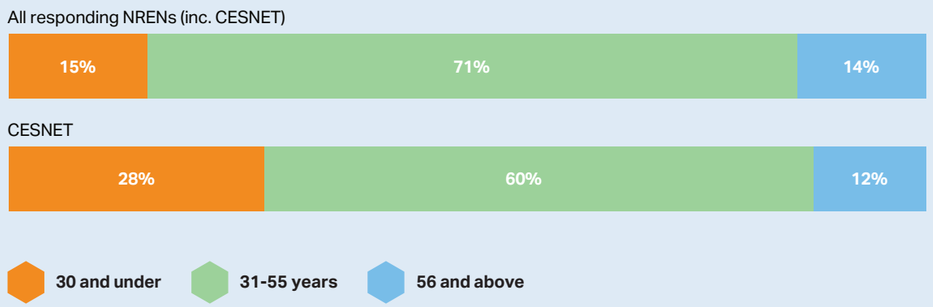


FIGURE 1.15
Age distribution of NREN employees across responding NRENs in 2025



Gender Distribution

When considering new questions to add to the Compendium Survey, efforts are made to ensure it does not grow too lengthy, out of respect for the time taken by NRENs to complete it.

In adding questions on the gender distribution of the NREN workforce, the decision was made to add it as a subsection of an existing question (the number of technical and non-technical full-time equivalents (FTEs)), rather than have it standing alone.

While this does give some interesting insights, as discussed in the Spotlight article, it did mean some NRENs struggled to answer the question, because while gender data is something they capture, it is not broken down by job type.

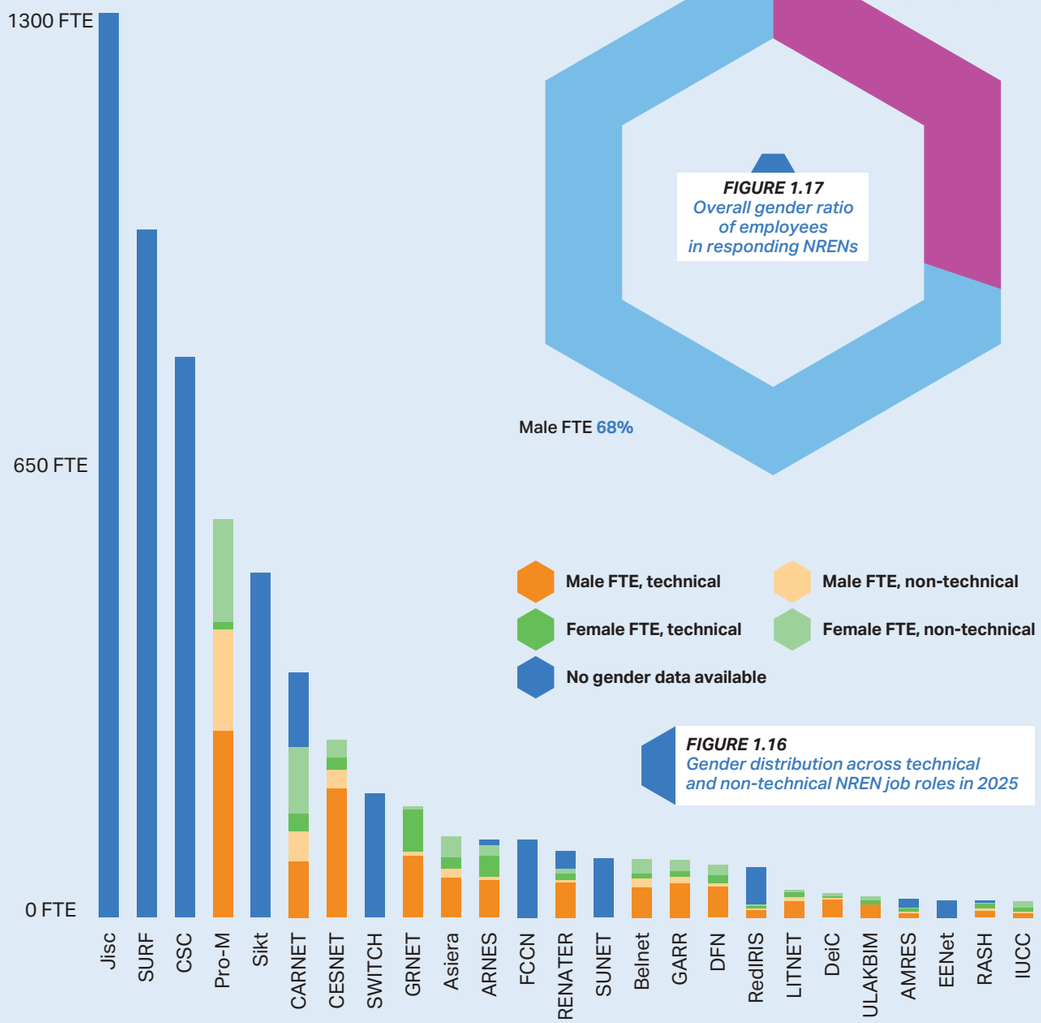


FIGURE 1.16
Gender distribution across technical and non-technical NREN job roles in 2025

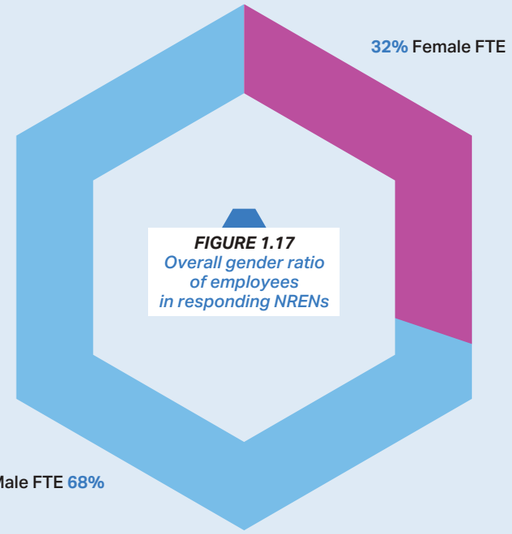


FIGURE 1.17
Overall gender ratio of employees in responding NRENs

Gender Equality in the NREN Community

— Veronika Di Luna, **GÉANT** EDI Committee Chair
— Gvantsa Jibladze, **GÉANT** EDI Committee Member

Gender equality is a core value of the EU and an aspiration uniting European institutions, governments, and the public, and is considered indispensable for achieving the EU's strategic goals[4]. To advance further progress in this area, the European Commission treats gender equality as a structural condition for research excellence, fairness, and societal impact.

As the EU's largest research and innovation R&I funding programme, Horizon Europe introduced the Gender Equality Plan (GEP) as a tool for institutional change for organisations seeking funding. This is particularly relevant for GÉANT and its members, as the current GN5-2 project, along with several smaller projects, is funded under Horizon Europe.

One of the mandatory GEP requirements is data collection and monitoring to ensure evidence-based, measurable, and accountable progress in the European R&I landscape. The European Commission therefore requires organisations to collect sex-disaggregated data on staff and identify where inequalities exist.

The 2025 Compendium Survey takes a concrete step in this direction, asking NRENs for the first time about gender distribution across technical and non-technical roles. The response rate tells its own story: only 28 of 41 responding NRENs were able to provide this data, pointing to systemic gaps in how gender is tracked across the community. Yet, the results offer an important indicative baseline.

Overall, staffing remains predominantly male (68% male vs 32% female FTE), but the real disparity lies in technical roles, where women represent only 18% of the workforce. In contrast, non-technical roles show a more balanced distribution, with women representing 58% of FTE.

These patterns mirror broader trends across Europe's digital and research landscape. Despite years of attention and initiatives, women still make up only about one in five ICT specialists across Europe[5]. This imbalance often begins long before the workplace – in education pathways, career choices, and the perception of technical fields as a "male" area. As a result, NRENs' gender distribution data doesn't just reflect an internal culture – NRENs also draw from a talent pool that is already imbalanced.

Diverse teams are proven to foster greater innovation, better decision-making, and more inclusive digital infrastructure. For the GÉANT community, these first insights are a starting point: a way to better understand the shape of the workforce and to contribute, collectively, to a more inclusive European research and education ecosystem. While the GEP is an individual organisational eligibility requirement under Horizon Europe[6], GÉANT's Equality, Diversity and Inclusion (EDI) Committee, which oversees the GÉANT organisation's gender equality efforts, is well placed to provide a platform in the future for the wider community to share experiences, challenges, and best practices, and aspires to use the data collected on gender distribution across NRENs to raise awareness and facilitate targeted cross-NREN networking on this subject.

4. Gender Equality Strategy 2026-2030 | European Commission https://commission.europa.eu/document/download/1f5fa936-9fba-4435-93f5-32fa220bac82_en?filename=gender-equality-strategy-2026-2030.pdf.
5. Women in Digital | European Commission https://digital-strategy.ec.europa.eu/en/policies/women-digital
6. Only public bodies, research organisations or higher education institutions established in a Member State or Associated Country are required to have a Gender Equality Plan in place: https://eige.europa.eu/gender-mainstreaming/toolkits/gear/horizon-europe-gep-criterion?language_content_entity=en

2. Standards and Policies

One of the aims of the annual Compendium is to show trends in the NREN community, so it was important to add a series of questions on artificial intelligence (AI) to the Standards & Policies section for 2025. The questions, asking about NREN AI strategies, the tools and services being used or developed by NRENs, and the AI infrastructures being offered by NRENs, seek to track developments in this area in the coming years.

The first Spotlight, from the steering committee of GÉANT's Special Interest Group on AI (SIG-AI), focuses on the emerging information from this first year of responses. The second Spotlight, by ARNES, has a slightly different focus, providing a concrete example of what investment in AI means in practice, through the successful application for EU funding for a new national data centre that will support high-performance computing and AI needs in Slovenia.

The EU AI Ecosystem

From Experimentation to Strategic Impact

— Daniela Brauner
Senior Research Engagement Manager
GÉANT

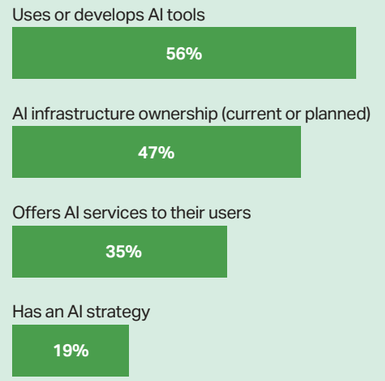
AI in R&E is no longer seen as a passing trend but as a structural shift, shaping research, education, and new digital infrastructure offerings. Rather than observing this transformation from the sidelines, NRENs are engaging and aligning technical capabilities, infrastructure investments, and community expertise to ensure that the R&E sector can benefit effectively from the evolving European AI landscape.

In this sense, 56% of responding NRENs are developing new AI use cases ranging from tools for the implementation of intelligent traffic classification, to automated log analysis for security threat detection and AI-assisted orchestration. These activities are actively exchanged through Special Interest Group (SIG) meetings, Infoshares, and events such as TNC and Security Days, reflecting a clear maturation both in the depth and quality of community discussions and in NRENs' engagement in adopting AI.

This progress is backed by concrete infrastructure investments. GÉANT Compendium data shows that 35% of NRENs already offer AI services, while 47% of member NRENs either own or plan to own AI infrastructure, including GPU clusters, cloud or HPC. The participation of the NRENs in the EuroHPC Joint Undertaking (EuroHPC JU)[7] by hosting or collaborating with AI Factories and AI Factory Antennas where possible is also worthwhile. NRENs provide the advanced connectivity required to interconnect these AI facilities across Europe, reinforcing their role as infrastructure enablers for AI at scale.

AI is emerging as a driver of growth and diversification within NRENs' service portfolios. As trusted providers of connectivity, NRENs form the backbone of the AI ecosystem, enabling data-intensive research and access to distributed AI infrastructures. At the same time, only 19% of NRENs currently report having a formal AI strategy to guide their roadmaps, suggesting that practice is, in many cases, advancing ahead of explicit strategic framing, given the fast pace of AI adoption worldwide. This presents a timely opportunity for NRENs to consolidate their experience gained through implementation into clearer AI strategies, aligning future growth with long-term organisational objectives and reinforcing their position within the European AI ecosystem.

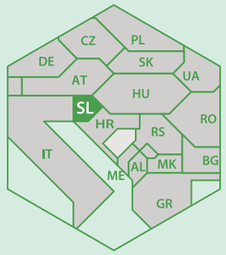
FIGURE 2.1
Levels of NREN engagement with AI across different categories



7. EuroHPC Joint Undertaking – national participation and governance models www.eurohpc-ju.europa.eu

ARNES: How a New National Data Centre in Slovenia Attracted Increased EU Investment

— Marianne Sheppard, Research Manager, **Jisc** UK
— Alenka Starc, Head of Project Office, **ARNES** Slovenia



Over the last three years, ARNES has received significant funding from the EU to support a number of projects, including investment in both the construction of a new national data centre in Maribor and wider LAN infrastructure upgrades. ARNES' role as the primary provider of connectivity, services, and infrastructure for Slovenian schools, universities, and research institutes positioned it as a natural vehicle for this investment.

The national data centre aims to provide a sustainable infrastructure for research, data services, and innovation in Slovenia. The cost of the project is in the region of EUR 14.5M, with around EUR 11.9M coming from EU Recovery and Resilience Facility (RFF) funding and the remainder provided by the Slovenian government.

The data centre will provide secure data storage, advanced digital services, and the capacity to host major national data assets. Slovenia's successful application to host a supercomputer further strengthened the case for EU investment to ensure the Maribor facility is able to provide the infrastructure required to support high-performance computing and AI needs.

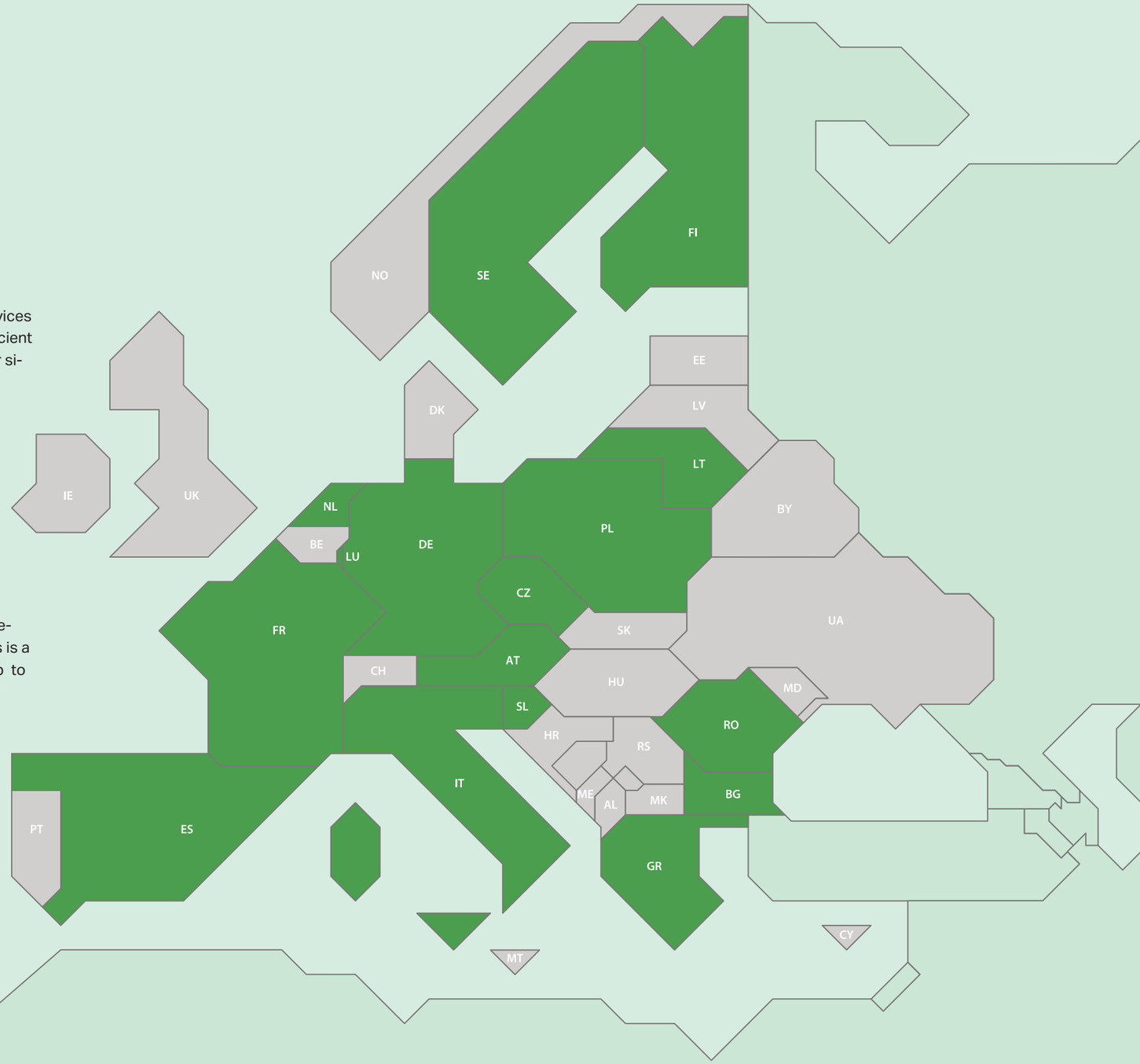
EU funding covers the cost of making the data centre operational, including the site itself, electrical and mechanical systems, connectivity, and the supporting digital infrastructure.

The facility is directly connected to a nearby hydropower plant on the Drava River, reinforcing its sustainability credentials—an increasingly important consideration in European funding decisions. By consolidating services that were previously spread across smaller, less efficient server rooms, the data centre is expected to deliver significant energy and efficiency benefits over time.

The scale of the project has been a learning experience for ARNES. Unlike previous initiatives, the data centre is primarily a construction project rather than an IT-only deployment. Defining the scope, navigating public procurement, and working with specialist consultants has required new expertise and extended timelines.

While the RFF funding covers the first stage of development scheduled for completion in mid-2026, this is a long-term project with further phases planned up to 2030. A key measure of success will be how widely the facility is adopted and used by the research and education community it was built to serve.

FIGURE 2.2
Countries where EuroHPC AI Factories have been announced



3. Connected Users
Education

For over 25 years, the GÉANT network of NRENs has been a fundamental part of Europe's e-infrastructure landscape, focused on enabling scientific excellence, research, innovation, and education. While all NRENs serve universities and research institutions, their work in the primary and secondary education sectors is spoken about less frequently.

As shown on the map, 25 of GÉANT's 43 NRENs have connecting schools (primary, secondary, or both) within their remit to some degree. However, as Figure 3.2 shows, serving schools is not necessarily the same as providing network connectivity. Compendium data shows a small number of NRENs provide other services, such as collaboration services, to secondary schools. Overall in 2025, a total of 21 NRENs reported providing some sort of service to primary schools, and 25 to secondary schools.

More detail about the types of services offered by NRENs to schools can be found in the Standards and Policies section of the Compendium website[8].

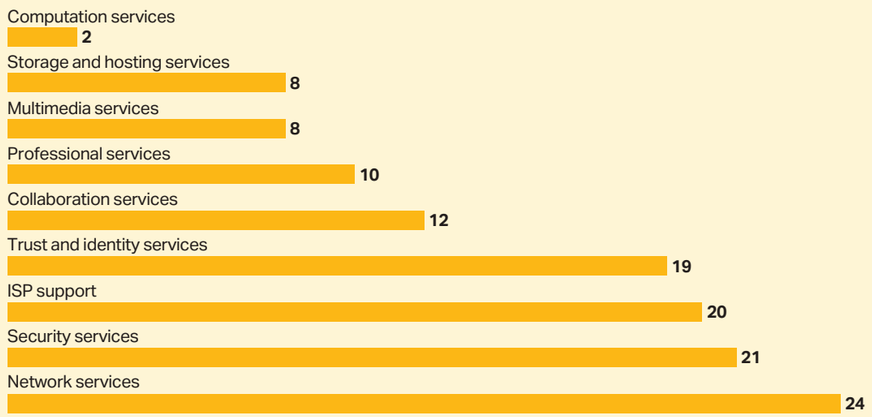
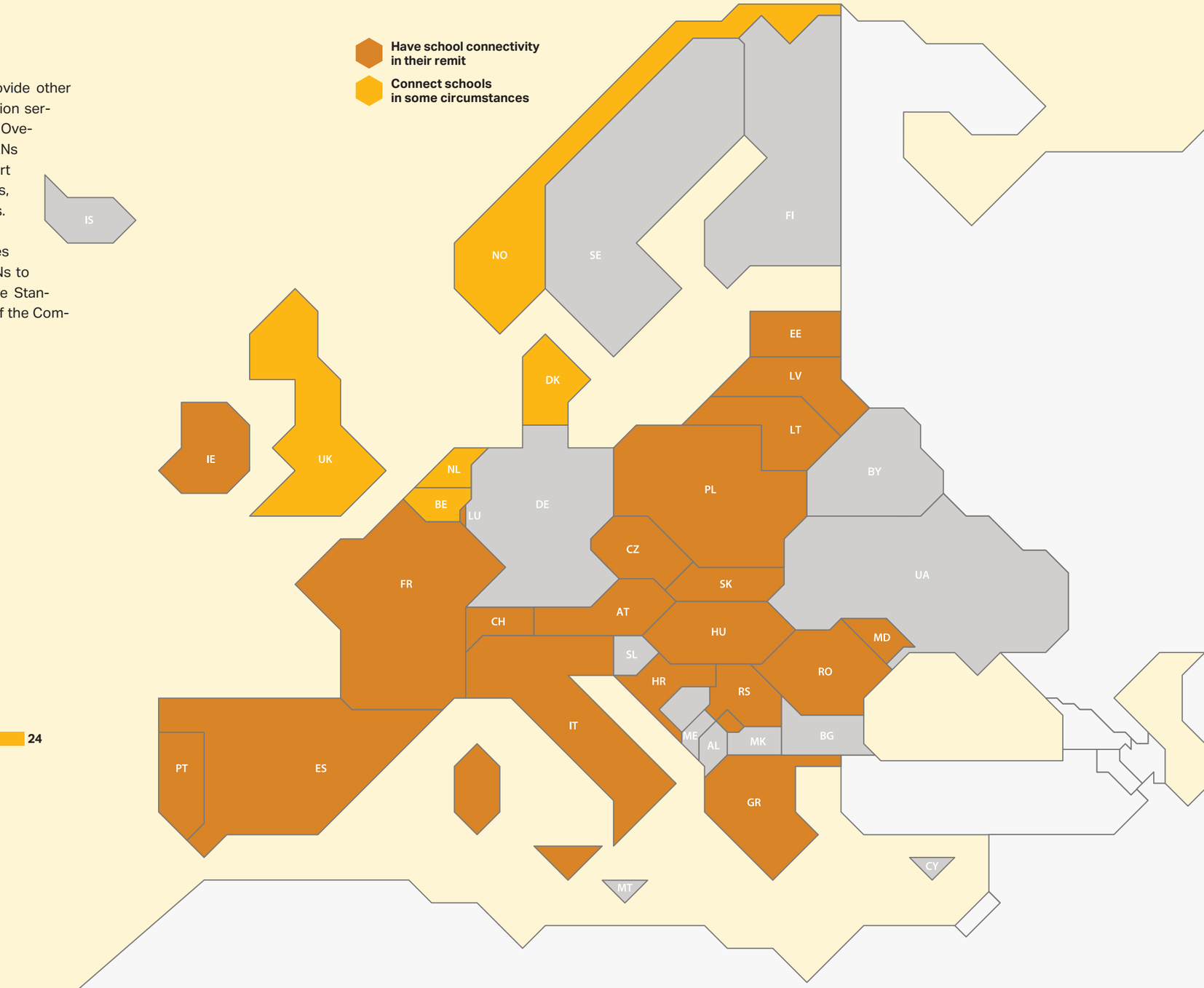


FIGURE 3.2
Numbers of NRENs offering different service categories to primary and secondary schools. More information about the services included in each category can be found on the Compendium website

8. GÉANT Compendium Data: Services Offered by NRENs by Types of Users compendium.geant.org/services-offered

FIGURE 3.1
NRENs with school connectivity in their remit, offering either national NREN access or transits to other networks, and those NRENs offering school connectivity in some circumstances



4. Network

The questions in the Network section of the Compendium were closely reviewed in advance of opening the 2025 Survey to ensure they still asked about relevant and important aspects of providing connectivity, managing performance, and ensuring that European R&E has the requisite capacity. This meant that some questions were retired (such as those about alien waves, and Performance Enhancement Response Teams (PERTs), for example) if they were deemed no longer necessary or relevant to modern NRENs. Historic responses to retired questions have been retained on the Compendium website, with new questions have been added in their place, including whether NRENs provide 24/7 incident management – something increasingly demanded by users.

The other Spotlights in this section look at fundamental aspects of the network: size and capacity. GARR, an outlier among NRENs, explains why it has been progressively increasing its dark fibre footprint in Italy over the past decade, enabling innovation beyond standard IP traffic in the future. Slovakian NREN SANET meanwhile tells the story of the doubling of its backbone capacity in 2025, all thanks to careful foresight and planning.

NOC Capabilities

Delivering New Insights into NREN NOC Capabilities

— Toby Rodwell, Head of Service Management, GÉANT

As the GÉANT community seeks to provide more federated services to international R&E users, it is important to know the levels of support that NRENs can commit to. Knowing which NRENs are able to respond to incidents 24/7 helps GÉANT plan and design new service proposals.

2025 was the first year this question was included in the Compendium Survey. A total of 34 NRENs responded to this question, revealing that almost three quarters of community members provide such support.

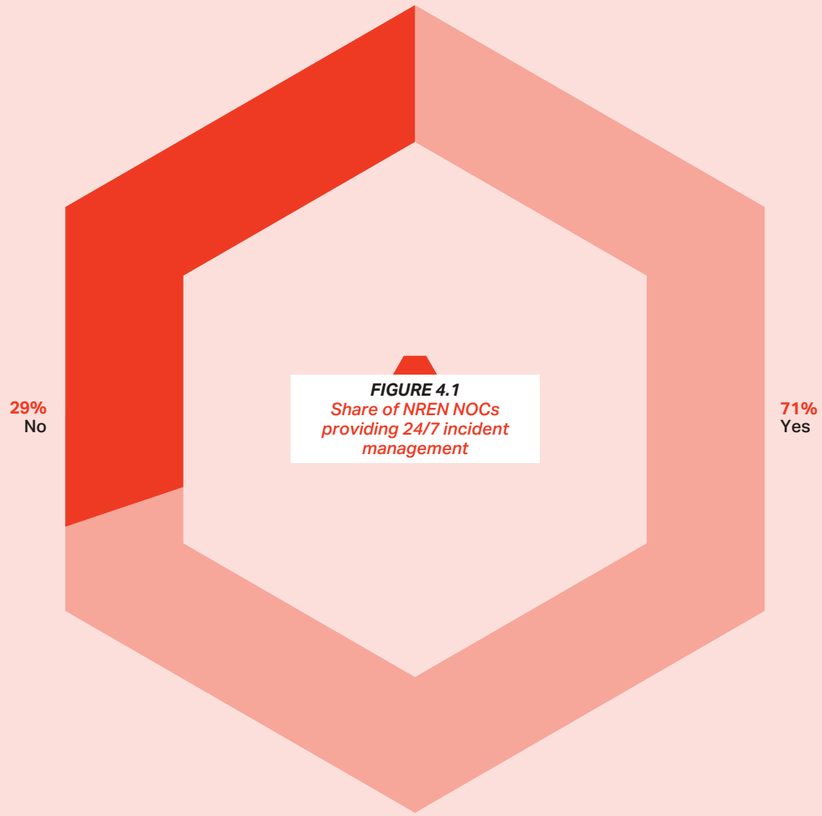


FIGURE 4.1
Share of NREN NOCs providing 24/7 incident management

Dark Fibre

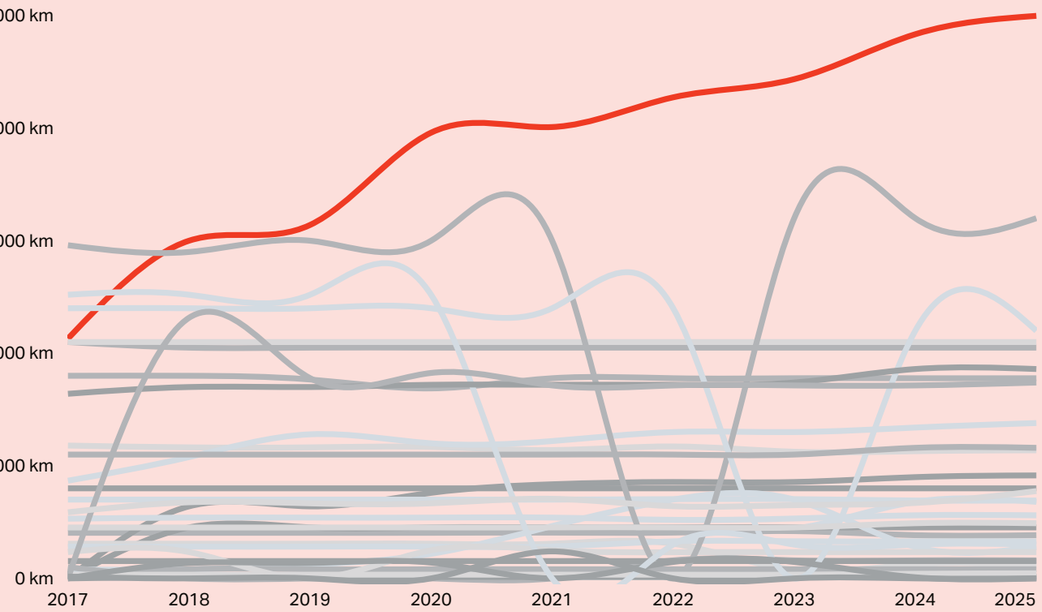
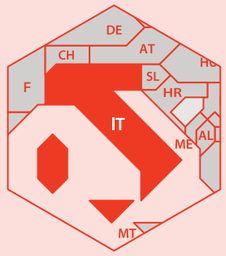


FIGURE 4.2
Kilometres of leased dark fibre per NREN by year, with GARR highlighted

GARR's Long View on Dark Fibre: Building Capacity, Autonomy and Reach



— **Greg Goodey, Research Manager, Jisc** UK
— **Elis Bertazzon, Communications Specialist, GARR** Italy

GARR's leased dark fibre footprint has expanded steadily over the past decade – a trend that stands out in the GÉANT Compendium data compared to other NRENs. Now exceeding 24,000 km of fibre, GARR's network is one of the most extensive in Europe. This growth did not happen by accident: starting in 2018–19, GARR launched a major network upgrade (the GARR-T project) and shifted from leasing managed capacity to acquiring long-term dark-fibre Indefeasible Right of Use (IRU) contracts to future-proof its infrastructure with far greater capacity, flexibility and autonomy.

GARR cites several motivations behind this shift alongside its raison d'être to build and operate the network on behalf of its users. One was bridging what it calls a "cultural divide" in access to knowledge – treating fibre connectivity as a social equaliser, not just a technical upgrade. Another factor was timing: favourable fibre market conditions in the late 2010s gave GARR an opportunity to invest at the right moment.

Finally, GARR believed that owning fibre was crucial groundwork for future innovation beyond standard IP traffic – enabling advanced services from precise timing to quantum communications experiments.

This expansion was enabled by initial investment from GARR's member institutions and supplemented by European recovery funding[9] (via Italy's National Recovery and Resilience Plan (NRRP) funding the National Research Centre for HPC, Big Data and Quantum Computing (ICSC) and Terabit Network for Research and Academic Big Data in Italy (TeRABIT) projects), which together financed fibre acquisition nationwide, including in areas with limited commercial provision.

Alongside this, GARR had already been strengthening its internal capability in optical network design and operation, enabling a more confident transition as the scale of deployment increased.

On the technical side, GARR adopted an open optical architecture with automation to avoid vendor lock-in and separate the fibre lifecycle from equipment. It also struck 15–20-year IRU contracts to secure long-term fibre usage rights with full technical control. This push wasn't without challenges: negotiating deals and reaching all parts of the country required multi-year planning and close collaboration with partner institutions.

Core network capacity has since jumped from 3 Tbps to over 37 Tbps (as of 2025), and 100 Gbps connectivity is now standard at connected sites (with some links reaching 1.6 Tbps via spectrum sharing).

Owning fibre has lowered GARR's cost-per-bit and improved its agility in meeting user needs. The network is also engineered for resilience: extensive route redundancy and automation should mitigate outages even during physical fibre cuts.

Looking ahead, GARR plans to continue extending its fibre infrastructure and the capabilities it supports to meet growing research demand. The roadmap includes higher-capacity optical channels (800 Gbps and 1,600 Gbps) and the use of fibre for new services such as time distribution and early quantum technologies.

GARR also notes that sustaining this model requires ongoing investment in equipment upgrades and careful management of long-term supplier relationships, with the network treated as an asset that must evolve over time. Reflecting on the past decade, GARR points out that it achieved its progress by combining long-term intent with favourable market conditions.

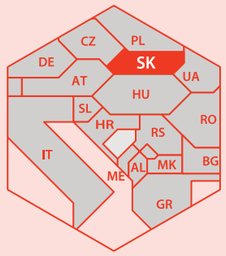
The resulting infrastructure is therefore seen as both a strategic achievement and a product of circumstances that aligned at the right moment.

9. Italy's recovery and resilience plan | European Commission https://reforms-investments.ec.europa.eu/recovery-and-resilience-facility-1/country-pages/italys-recovery-and-resilience-plan_en#whats-in-the-plan

Backbone Capacity

SANET: Scaling Backbone Capacity to Meet Growing Research Demand

— Greg Goodey, Research Manager, **Jisc** UK
— Marian Ďurkovič, CTO, **SANET** Slovakia



In this year's Compendium Survey, SANET reported a significant increase in its IP backbone capacity, doubling from 200 Gbps to 400 Gbps. While headline figures can sometimes mask complexity, the story behind this upgrade is one of long-term planning, deliberate architectural choices, and a measured response to evolving research demand within Slovakia.

SANET's backbone, first deployed at 200 Gbps in 2015, was designed at a time when that level of capacity exceeded immediate national requirements. Since then, demand has grown steadily, driven primarily by data-intensive research and high-performance-computing (HPC) needs. Two established HPC centres in Bratislava and Košice already support large, petabyte-scale data flows linked to CERN's Large Hadron Collider (LHC) project. This trajectory has been reinforced by the deployment of two additional national HPC systems — one at the Slovak Academy of Sciences in Bratislava[10] and another at the Technical University of Košice[11] — both funded through Slovakia's Recovery and Resilience Plan and designed to operate as a coordinated national resource.

Crucially, SANET's response to this rising demand did not take the form of a reactive capacity scramble or a forced core refresh. The move to 400 Gbps was a planned activation of spare capacity designed into the existing DWDM optical backbone from the outset. No optical rebuild or wholesale replacement of core infrastructure was required; instead, SANET enabled additional wavelengths, aggregating four 100 Gbps channels to form a higher capacity trunk.

This foresight significantly reduced implementation risk, cost, and delivery time, with new investment largely limited to upgrading the border router connecting SANET to the GÉANT network (also at 400 Gbps).

The result is a backbone that can reliably support four HPC centres, each connected at 100 Gbps, while maintaining headroom for broader research and education traffic. User feedback suggests that this capacity is already being used as intended, with sustained high-throughput data transfers to European partners now routine.

For other NRENs, SANET's experience highlights a clear contrast between planned scalability and reactive upgrades. Early investment in dark fibre and over-specified transmission platforms created options that could be exercised when demand materialised, rather than forcing urgent and disruptive infrastructure replacement.

At the same time, SANET is realistic that this upgrade represents the final evolutionary step for the current generation of equipment. Future growth – towards native 400 Gbps and beyond – will require coordinated hardware renewal and sustained engagement with national funders, emphasising the importance of aligning technical roadmaps with both long-term funding cycles and emerging user demand.

10. Slovakia One Step Closer to a New Supercomputer https://www.sav.sk/?lang=en&doc=services-news&source_no=20&news_no=12723
11. Projects Funded by the Recovery and Resilience Plan of the Slovak Republic – Component 17 – TUKE https://www.tuke.sk/en/projects-funded-by-the-recovery-and-resilience-plan-of-the-slovak-republic-component-17

FIGURE 4.3
NREN backbone capacity in Gbps in 2022–25, with SANET highlighted

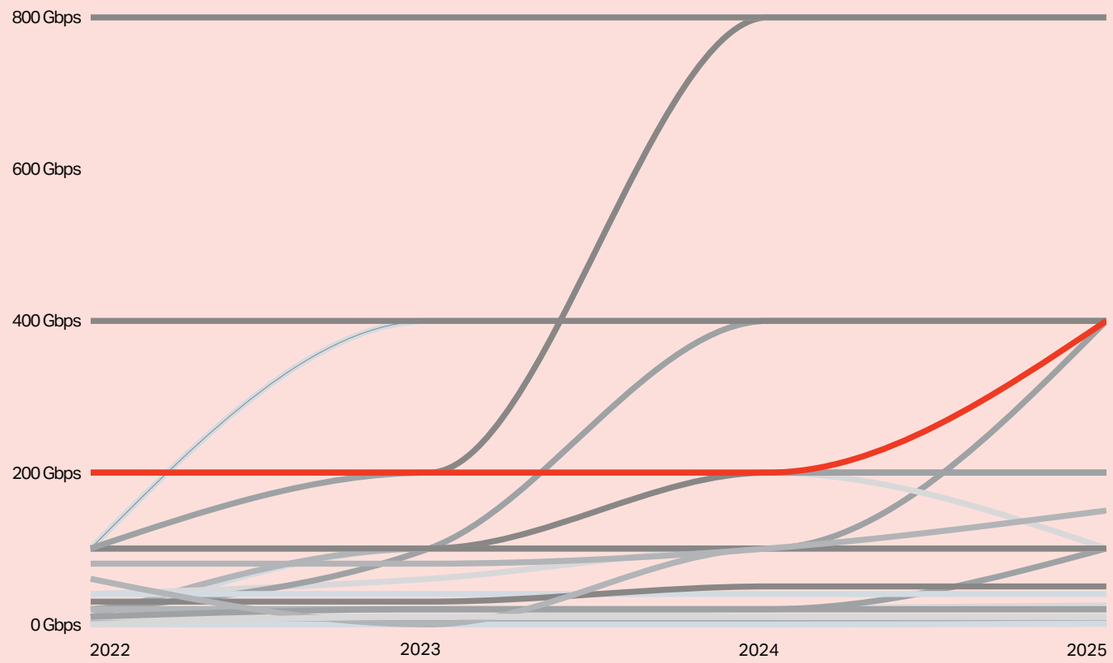
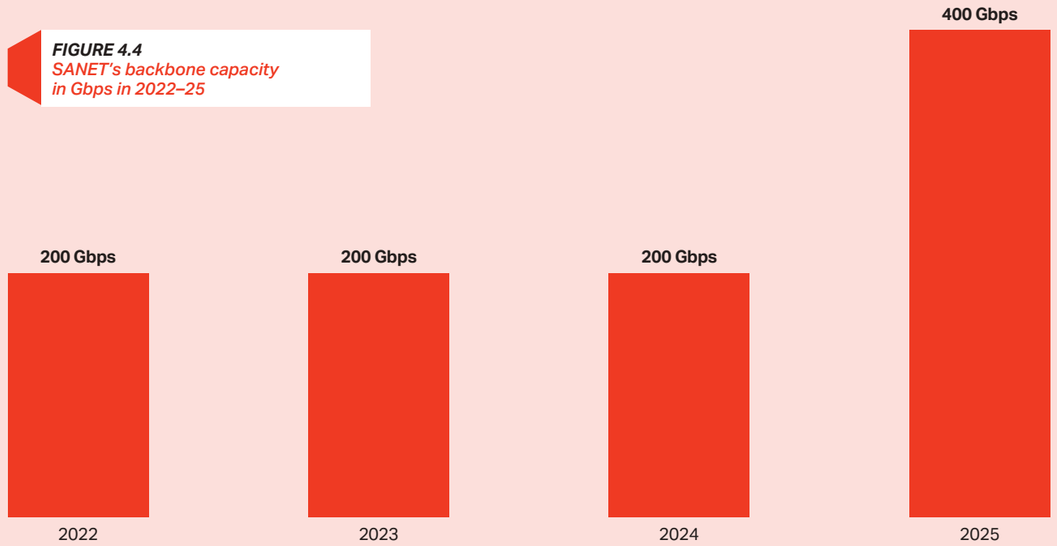


FIGURE 4.4
SANET's backbone capacity in Gbps in 2022–25



5. Services

A new service category, ‘computation services’, was added to the Compendium Survey in 2025 containing two options: cloud-based and on-premise compute services. While this category is new to the Compendium, these are not necessarily new services offered by the NRENs – indeed, 54% of the NRENs responding to the Survey offer at least one of the two flavours.

FCCN, the subject of the Spotlight in this section, is one of the 8 NRENs that report offering both, alongside ASNET-AM (Armenia), CESNET (Czechia), GRENA (Georgia), GRNET (Greece), SURF (Netherlands), ULAKBIM (Türkiye), and URAN (Ukraine). More information about these offerings can be found in the Services section of the Compendium website[12].

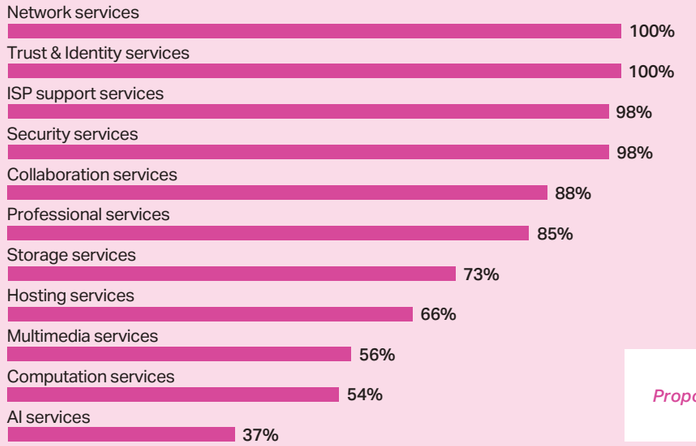
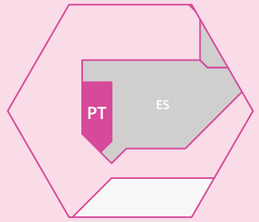


FIGURE 5.1
Proportions of responding NRENs offering different categories of services

FCCN and CNCA: Re-Establishing National Computing Capacity in Portugal

— Greg Goodey, Research Manager, **Jisc** UK
— João Nuno Ferreira, Director, **FCCN** Portugal



After several decades without a nationally coordinated supercomputing capability, Portugal has re-established a central approach to advanced computing through FCCN (Portugal’s NREN) and the National Centre for Advanced Computing (CNCA). As reflected in FCCN’s 2025 Compendium Survey responses, this represents a significant shift in how computation services are delivered to the Portuguese research and innovation community.

FCCN operates within FCT, Portugal’s national research funding agency. While FCCN’s networking capability has long been well established, the deployment of advanced computing services required deliberate rebuilding.

Initial momentum came through Portugal’s early participation in the EuroHPC JU, alongside Spain, providing access to European-scale infrastructure while national capability was redeveloped.

Domestically, provision evolved from an informal federation of existing university and research computing resources into a more structured national model. This transition accelerated with the commissioning of Deucalion, Portugal’s first petascale system, which entered production in 2024. Since then, demand has grown rapidly, with more than a thousand research projects now awarded compute time across national and European platforms.

A pivotal step in 2025 was the formal establishment of CNCA, with FCT holding a controlling stake. Rather than embedding operations directly within FCCN, CNCA was created as a dedicated execution entity responsible for operating advanced computing services, bringing HPC, distributed platforms, cloud services, and emerging areas such as AI and quantum under a single national framework aligned with FCT’s funding and strategy role. CNCA operates with a membership-based governance model including most of Portugal’s major universities and research organisations, supporting shared investment, transparent access, and a national rather than institutional focus, with early indications pointing to strong uptake and growing demand as user maturity and AI-driven workloads expand.

Across Europe, approaches to computing provision vary, with some countries operating dedicated national computing centres separate from their NRENs, while others retain more integrated models combining network, compute, and data services within a single organisation[13]. Portugal’s recent evolution reflects a gradual move towards clearer separation between coordination and execution, positioning CNCA alongside established national computing entities elsewhere, while maintaining close alignment with FCCN and organisations in the wider research infrastructure landscape such as the EuroHPC JU and European national computing operators including Italy’s ICSC[14] and GENCI, the French national HPC agency[15].

Looking ahead, FCCN is seeking to position computation alongside networking and data as one of three shared national digital pillars supporting research and innovation. With network services well established and advanced computing now operating at scale through CNCA, data is emerging as the next national priority.

This includes expanding storage and curation capability, bringing high-value datasets closer to compute, and supporting FAIR data principles[16] and trusted research data practices as part of a more integrated digital research ecosystem.

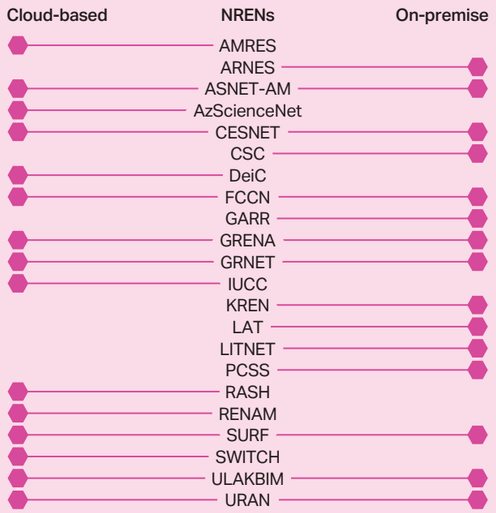


FIGURE 5.2
NRENs’ computation service offerings: cloud-based vs on-premise

12. GÉANT Compendium Data: NREN Computation Services https://compendium.geant.org/computation-services
13. GÉANT Compendium Data: NREN Computation Services https://compendium.geant.org/computation-services
14. CINECA/ICSC https://www.supercomputing-icsc.it
15. GENCI, the French national HPC agency https://www.genci.fr
16. FAIR data principles https://www.go-fair.org/fair-principles/

Acknowledgements

Compendium Advisory Board

— Jennifer Ross (GÉANT), Gvantsa Jibladze (GÉANT), Daniela Brauner (GÉANT), János Mohácsi (Pro-M/NIIF), Hank Nussbacher (IUCC), Jan Meier (Sikt)

The development of the GÉANT Compendium of NRENs is overseen by the Compendium Advisory Board (CAB), a group drawn from NREN experts and dedicated GÉANT staff members, seeking to ensure that the Compendium remains relevant and meets the needs of the community as a whole.

Chaired by Jennifer Ross, GN5-2 WP3 T1 sub-task lead on Insights and member of the Partner Relations team, the GÉANT CAB members include Gvantsa Jibladze (Partner Insights Analyst) and Daniela Brauner (Senior Research Engagement Manager & AI expert), joined by three NREN representatives: János Mohácsi (Head of International Research and Development, Pro-M, Hungary), Hank Nussbacher (Director of Network, IUCC, Israel), and since 2025, Jan Meijer (Senior International Strategy Advisor, Sikt, Norway).

For 2025, the CAB responded to interest in the community to better understand the ways that NRENs receive funding, how they are staffed, and how they spend money, as is reflected in the Spotlights in this Report.

While the Report touches on the theme of education this year, 2026 will see a new subsection of questions, taken from the TF-Education survey, and added to the Compendium for the years to come. The intention is to reduce the demand on NRENs to complete multiple surveys, and to ensure that important information about NRENs is collated and easily accessible.

The CAB encourages readers of this Report to share their feedback and suggestions with the Board, either by reaching out to individual members, or via GÉANT Partner Relations.

Glossary

AI	Artificial Intelligence
CAB	Compendium Advisory Board
CEF	Connecting Europe Facility
CNCA	Portugal's National Centre for Advanced Computing
DEP	Digital Europe Programme
ECF	European Competitiveness Fund
EDI	Equality, Diversity and Inclusion
EOSC	European Open Science Cloud
EOSC-A	EOSC Association
ERDF	European Regional Development Fund
EuroHPC JU	European High-Performance Computing Joint Undertaking
FTE	Full-Time Equivalent
Gbps	Gigabit per second
GEP	Gender Equality Plan
HPC	High-Performance Computing
HR	Human Resources
ICSC	Italian National Research Centre for HPC, Big Data and Quantum Computing
IRU	Indefeasible Right of Use
LHC	Large Hadron Collider
MFF	Multiannual Financial Framework
NGEU	NextGenerationEU
NOC	Network Operations Centre
NREN	National Research and Education Network
NRRP	National Recovery and Resilience Plan
PERT	Performance Enhancement Response Team
R&E	Research and Education
R&I	Research and Innovation
REN	Research and Education Network
RRF	Recovery and Resilience Facility
SIEM	Security Information and Event Management
SIG	Special Interest Group
SIG-AI	Special Interest Group on AI
SOC	Security Operations Centre
Tbps	Terabit per second
TeRABIT	Terabit Network for Research and Academic Big Data in Italy

Appendix

Contact List

The following table lists the NRENs that responded to the 2025 Compendium survey and contains links to their respective websites.

NREN	COUNTRY	WEBSITE
ACOnet	Austria	www.aco.net
AMRES	Serbia	www.amres.ac.rs
ARNES	Slovenia	www.arnes.si
ASNET-AM	Armenia	www.asnet.am
AzScienceNet	Azerbaijan	azsciencenet.az/en
Belnet	Belgium	www.belnet.be
BREN	Bulgaria	www.bren.bg
CARNET	CroaĚa	www.carnet.hr
CESNET	Czechia	www.ces.net
CSC	Finland	www.csc.fi
CYNET	Cyprus	www.cynet.ac.cy
DeiC	Denmark	www.deic.dk/en/front
DFN	Germany	www.dfn.de
EENet	Estonia	www.eenet.ee
FCCN/FCT	Portugal	www.fct.pt
GARR	Italy	www.garr.it
GRENA	Georgia	www.grena.ge
GRNET	Greece	www.grnet.gr
HEAnet *Asiera from 1/1/2026*	Ireland	www.heanet.ie | asiera.ie
IUCC	Israel	www.iucc.ac.il
IMCS UL	Latvia	www.lumii.lv
Jisc	United Kingdom	www.jisc.ac.uk
KREN	Kosovo*	www.kren-ks.eu
LITNET	Lithuania	www.litnet.lt
MARnet	North Macedonia	www.marnet.mk
MREN	Montenegro	www.mren.ac.me
PCSS	Poland	www.pcss.pl
Pro-M/NIIF	Hungary	www.pro-m.hu
RASH	Albania	www.rash.al
RedIRIS	Spain	www.rediris.es
RENAM	Moldova	www.renam.md
RENATER	France	www.renater.fr
Restena	Luxembourg	www.restena.lu
RoEduNet	Romania	www.nren.ro
SANET	Slovakia	www.sanet.sk
Sikt	Norway	www.sikt.no/en/home
Sunet	Sweden	www.sunet.se/en/about-sunet
SURF	Netherlands	www.surf.nl
Switch	Switzerland	www.switch.ch
ULAKBIM	Türkiye	www.ulakbim.gov.tr
URAN	Ukraine	www.uran.net.ua

**This designation is without prejudice to positions on status and is in line with UNSCR 1244 and the ICJ opinion on Kosovo Declaration of Independence*

Notes

GÉANT Compendium Report of National Research and Education Networks in Europe

2025 Edition

The GÉANT Compendium provides an authoritative reference source for anyone with an interest in the development of research and education networking in Europe. Published since 2001, the Compendium provides information on key areas as NREN user, services, traffic, budgets and staffing.

The GÉANT NREN Compendium may be found online at compendium.geant.org.

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