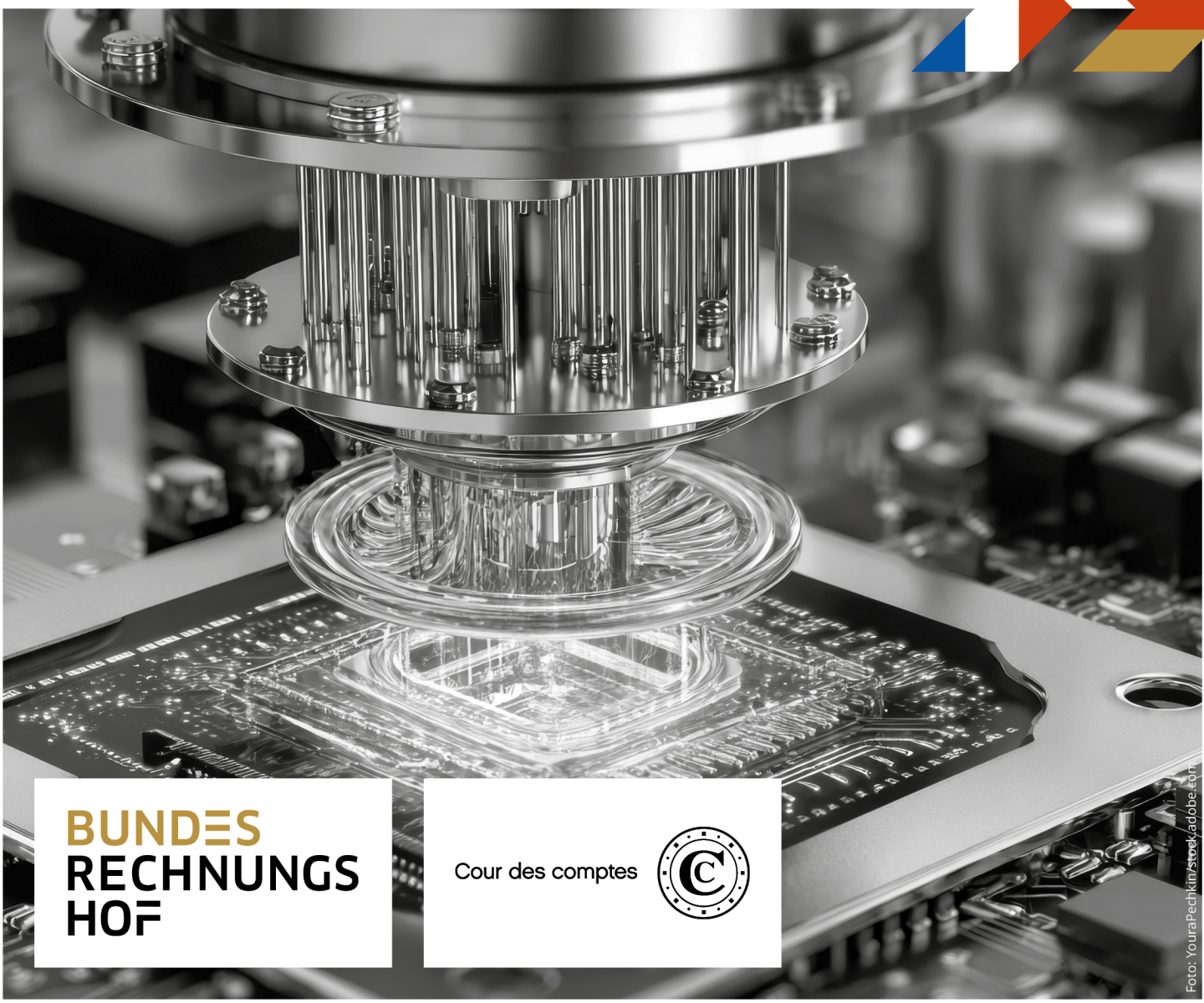
Funding of quantum technologies

Parallel audit by Bundesrechnungshof and Cour des comptes

2026



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List of abbreviations

B

BMFTR *Federal Ministry of Research, Technology and Space*
BMWE *Ministry for Economic Affairs and Energy*
Bpifrance *French Public Investment Bank*

D

DLR *German Aerospace Center*
DLR QCI *Quantum Computing Initiative*

E

EFI *The Commission of Experts for Research and Innovation*
EPO *European Patent Office*
EuroQCI *European Quantum Communication Infrastructure*

H

HTAD *High Tech Agenda Germany*

N

NQS *National Quantum Strategy*
NQTP *National Quantum Technologies Programme*

O

OECD *Organisation for Economic Co-Operation and Development*

R

R&D *Research and Development*

S

SGPI *General Secretariat for Investment*

Glossary

ENABLING TECHNOLOGIES: The range of tools, methods and infrastructure (e.g. cryostats, lasers, error-correction software) that make it possible to develop and operate quantum computers and sensors.

QUANTUM SENSORS: Devices that use quantum properties to measure physical quantities with far greater accuracy than conventional sensors.

QUANTUM COMPUTING: Any of a variety of quantum computing technologies, including quantum annealing and quantum gate-model systems that utilize a variety of architectures, such as superconductors, ion traps, photonics, neutral atoms, atomic spin, electron spin, or topological qubits.

QUANTUM COMPUTER: A machine that uses qubits to perform calculations, which is potentially more powerful than a traditional computer for some problems.

QUANTUM ALGORITHM: A computational method designed for a quantum computer, which is often faster than traditional algorithms for some problems (e.g. database searches, cryptography).

QUANTUM SIMULATOR: A quantum computer designed specifically to simulate quantum systems (e.g. molecules).

Editorial

Over the past decade, quantum technologies have attracted growing attention from academia, industry, and policymakers alike. Their potential to drive transformative innovation – both as standalone technologies and in conjunction with other emerging fields, such as artificial intelligence, advanced materials, and high-performance computing – has sparked considerable interest worldwide. As a result, a global competition has emerged among nations, research organisations, and companies seeking to establish leadership positions in quantum science and its commercial applications.

France and Germany have invested heavily in quantum technologies in recent years. With this public spending in quantum technologies, they aim to strengthen their technological sovereignty, enhance economic competitiveness, and secure strategic advantages in a rapidly evolving global technology race. Both countries view quantum technologies as a key enabling technology with the potential to transform industries, improve national security, and generate long-term economic growth.

In order to shed light on this financially significant area of public funding for the first time, the German Supreme Audit Institution (Bundesrechnungshof) and the French Supreme Audit Institution (Cour des comptes) conducted a parallel audit on the funding of quantum technologies. The aim of our audit was to gain insights into the strategic direction, governance and funding of the various national initiatives. We documented our findings in detail in two national reports.

In this synthesis report, we summarise the similarities and differences between the two countries. We identified a range of weaknesses, notably the following:

→ While the German and French Governments both set up ambitious national programmes to support developments in quantum technologies, the monitoring and evaluation of these initiatives could be improved, e.g. by clear and measurable indicators and robust retrospective evaluations.
→ Quantum technologies involve a wide range of actors. The established governance structures and coordination mechanisms have proven to be complex and not always effective.
→ Both governments also count on temporary or special-purpose funding streams to support quantum technology development. Such instruments tend to undermine predictability and limit the potential for sustained, long term impact.
→ European cooperation is essential to succeeding in the global race for quantum technologies. Although collaboration and harmonisation have been fostered in recent years, initiatives could be better aligned and governance simplified.

With our national reports and this synthesis report, the Bundesrechnungshof and the Cour des comptes aim to make recommendations on how to better set up the strategic framework for quantum technology funding, to foster its monitoring and evaluation, to secure effective governance and to strengthen European cooperation.

Given the rapid evolution of quantum technology, this synthesis report represents an important first step towards understanding and monitoring these advances from an audit perspective. As the field continues to evolve, sustained scrutiny and assessment by Supreme Audit Institutions will remain essential.

Amélie de Montchalin
First President of the Cour des comptes

Paris, October 2026

Ansgar Heveling
President of the Bundesrechnungshof

Bonn, October 2026

Cour des comptes

BUNDES RECHNUNGS HOF

1 Introduction

1.1 About quantum technologies

Quantum technologies are considered among the most promising emerging technologies of the 21st century. Experts believe that quantum technologies have the potential to transform science, industry, and society, as they offer fundamentally new approaches to information processing, communication, sensor technology, and materials research. Possible applications range from ultra-precise measurement techniques and secure quantum communication to quantum computers capable of solving problems that exceed the limits of traditional computing. More recently, the importance of quantum technologies in security and defence matters was emphasised, due to their potential to transform military capabilities, redefine digital security, and influence geopolitical power dynamics.

At the same time, the development of quantum technologies is scientifically complex, resource-intensive, and associated with significant technological risks. Breakthroughs often require long-term research efforts and close collaboration across disciplines, such as physics, computer science, engineering, and industry. Under these conditions, public research funding plays a crucial role as private investment alone is frequently insufficient to fully exploit the innovation potential in the field.

What are quantum technologies?

Quanta represents the smallest possible unit of a physical quantity that cannot be further divided. According to the concept of superposition, quanta can exist in multiple states simultaneously. They only assume a specific state when measured. Quantum technologies focus on engineering use of quantum properties. These properties include, for example, the state superposition or the quantum entanglement. Quantum technologies use these fundamental principles of quantum mechanics. This enables them to take on new and improved applications in metrology, communication security, computing performance and many other areas.

Current research focuses on quantum computing, quantum simulation, quantum communication, quantum-based metrology and foundational technologies for quantum systems. Another area of research is photonics. Photons are also quanta, representing the smallest known unit of light. Photonics technologies are essential for many quantum technology applications.[1]

[1] See, for example, BMFTR's Website on quantum technologies, accessed on 1 July 2026.

1.2 Quantum technologies as national priority

Given their expected impact on secure communications, computing, defence, and economic security, quantum technologies have risen to the top of the policy agenda at both the national and international levels. This is why many countries have launched national programmes to promote quantum technologies in recent years.

Table 1

Quantum technologies as national priority

Country	Strategy	Key programmes/initiatives	Budget (in EUR)	Duration
European Union	Quantum Flagship	European High Performance Computing Joint Undertaking, European Quantum Communication Infrastructure (EuroQCI)	€1 billion	2018-2028
Germany	Quantum Technologies Conceptual Framework Programme	Quantum Systems Research Programme[a]	€3 billion	2023-2026
	High-Tech Agenda Germany		Total budget: not published[b]	from 2025
France	Quantum Plan – France National Quantum Strategy	Quantum National Research Programme Proqcima (public procurement)	€1.5 billion	2021-2025
	Following Quantum Plan	Undetermined	€1 billion	2026-2030
United Kingdom	National Quantum Strategy (NQS)	National Quantum Technologies Programme (NQTP)	NQS: €2.97 billion NQTP: €1.16 billion	NQS: 2023-2025 NQTP: 2014-2024
	National Framework for Quantum Standards	ProQure (public procurement)	€2.3 billion	Oct.2026-Sept. 2028
China	Made in China 2025 14th Five-Year-Plan	National Key Research and Development (R&D) Projects National Laboratory of Quantum Information	estimated €15 billion	2021-2025
USA	National Quantum Initiative Act		€1 billion	2019-2025
	Planned: National Quantum Initiative Reauthorization Act[c]		Planned: €2.35 billion for fiscal years 2025-2029	until 2034
	CHIPS and Science Act	Subsidies and stakes in 9 companies	€1.75 billion	announced in May 2026

Explanations:

[a] The Quantum Systems Research Programme runs from 2022 to 2032. Additionally, the Concept for the 2020 economic stimulus and future package runs from 2021 to 2026.

[b] Total budget for 2026 for project funding: €421.7 million.

[c] A reauthorization bill introduced in the U.S. Senate provides for the authorisation of $2.7 billion for quantum research and development for fiscal years 2025 - 2029; a final decision on the bill has not yet been made.

Source: Own presentation based on: Schmaltz, Thomas et al. (2025): Quantentechnologien und Quanten-Ökosysteme, Studien zum deutschen Innovationssystem, No. 7-2025; The Commission of Experts for Research and Innovation (EFI), Berlin, page 80, recent press releases of UK's Government; Website of the Congress of the US.

As shown in table 1, France and Germany are among the countries that have set up dedicated national programmes on quantum technology. Furthermore, both governments have allocated substantial funding to these programmes.

Quantum technologies also play an important role in the EU. In July 2025, the European Commission presented a comprehensive Quantum Europe strategy.[2] Its goal is to make Europe the global leader in quantum technologies by 2030. Since 2018, the EU has been running the Quantum Flagship, a ten-year programme designed to promote quantum technologies. This initiative connects research institutions, industry, and public donors to strengthen Europe's scientific leadership and excellence.[3] The EU Quantum Act will build on the Quantum Europe Strategy and is scheduled for the third quarter of 2027.[4] Its main objectives are:

→ To boost research and innovation.
→ To scale up industrial capacity, including pilot lines and a design facility.
→ To reinforce supply chain resilience and governance.[5]

1.3 Scope and objectives of the audit

Against this backdrop, the Bundesrechnungshof and the Cour des comptes conducted a parallel audit.[6] Each Supreme Audit Institution carried out the audit in its own country and under its own responsibility. While the German audit addressed the promotion of research in quantum technologies broadly, the Cour des comptes' audit concentrated primarily on quantum computing. The findings of these respective audits are detailed in two separate reports:

The Bundesrechnungshof examined the Federal Government's funding of quantum technologies with a focus on its strategic dimension and implementation. The findings were summarised in the national report on Promotion of Quantum Technologies: Strategic Direction and Implementation ("Förderung der Quantentechnologien: Strategische Ausrichtung und Umsetzung").[7]

The Cour des comptes presented the results of its audit in the report on Support for Quantum Computing: Initial Assessment and Outlook ("Le soutien à l'informatique quantique. Premier bilan et perspectives").[8] The report provides an overview of funding

[2] Communication from the Commission to the European Parliament and the Council (2025): Quantum Europe Strategy - Quantum Europe in a Changing World, COM(2025) 363 final.
[3] For further information, see the website of the Quantum Flagship, accessed on 1 July 2026.
[4] Originally, the adoption of EU Quantum Act was scheduled for the second quarter of 2026.
[5] Website of the European Commission on Quantum, accessed on 1 July 2026.
[6] In addition to the Franco-German audit, the Netherlands' Supreme Audit Institution (Netherlands Court of Audit) recently carried out a dedicated audit on quantum technologies and of how this topic is handled within the central government. The findings were published in a report.
[7] The report can be downloaded from the website of the Bundesrechnungshof.
[8] The report can be downloaded from the website of the Cour des comptes.

for quantum computing in France, from initial training to research and up to corporate innovation. The enabling technologies of quantum computer, such as lasers or cryostats, are included in the study.

In addition, joint audit key areas and questions were identified. They served to explore similarities and differences between the French and the German funding of quantum technologies. The results form the basis of this synthesis report. Its aim was to develop recommendations for the relevant ministries from both countries.

2 National strategies and funding framework

2.1 Germany

The Federal Government has identified quantum technologies as a key technology for securing Germany's technological sovereignty and strengthening its competitiveness. Several ministries are involved in promoting quantum technologies, with the Federal Ministry of Research, Technology and Space (BMFTR) taking the lead within the Federal Government.

There are currently four valid concepts and programmes. They were published at different times and differ in their durations. The individual objectives of these concepts and programmes are not identical. However, the following priorities are apparent:

→ development of more powerful quantum computers
→ new products/fields of application in quantum sensor technology
→ strengthening and expanding quantum communication
→ increasing the number of end users and start-ups.

Concept for the 2020 economic stimulus and future package

The Concept for the 2020 economic stimulus and future package served to release additional budget for quantum technologies. It runs from 2021 to 2026. In particular, it defines objectives and milestones for quantum computing. In addition to the BMFTR, other ministries are also involved in the implementation.

Quantum Systems Research Programme

In 2022, the BMFTR launched the Quantum Systems Research Programme, which runs until 2032. It constitutes the strategic framework for the BMFTR´s quantum technology funding. The programme defines milestones for quantum computing, quantum sensing, and photonics.

Quantum Technologies Conceptual Framework Programme

The Quantum Technologies Conceptual Framework Programme is the political strategy of the Federal Government and aims to establish Germany as a world leader in quantum technologies. It was published in 2023 and addresses all ministries involved in the promotion of quantum technologies. It sets objectives and milestones in quantum computing, quantum sensing, quantum communication and standardisations.

High-Tech Agenda Germany (HTAD)

The High-Tech Agenda Germany is the Federal Government's latest innovation initiative, published in 2025. It focuses on six key technologies, one of which are the quantum technologies. It sets objectives and key flagship measures. For every key technology, the BMFTR published a "roadmap" including milestones, a timeframe, actions, indicators and implementation partners.

Assessment and monitoring

The four concepts and programmes do not present a very clear funding framework. They name objectives, milestones and funding measures that are not identical. Their relations to each other are not transparently presented. As a result, it is rarely possible to identify the government's specific goals for the funding. It would be appropriate to have only one strategic framework on which to base a funding programme. Objectives, milestones and funding measures of concepts and programmes funding quantum technologies must be harmonised.

According to the Federal Budget Code, appropriate performance studies[9] shall be conducted for all measures that have a fiscal impact. The performance studies cover

[9] According to the Federal Budget Code, appropriate cost-effectiveness analyses must be conducted for all measures with financial implications. This requirement is intended to ensure that public funds are used economically and efficiently.

the planning phase prior to the publication of a measure, the implementation period and a retrospective evaluation.[10]

The BMFTR reviewed the performance during and after implementation of the individual funded projects. It did not conduct appropriate performance studies for all concepts and programmes that have a fiscal impact. Not all goals are developed using the SMART[11] criteria.

A similar problem arises when looking at the situation across ministries. With regard to the management of the quantum technology activities, there is no overall monitoring for all governmental activities. This is also true when it comes to the concurrent evaluation of the governmental funding activities. Although, for example, the governmental Quantum Technologies Conceptual Framework Programme stated that "the impact of the Federal Government's measures is tracked using overarching and topic-specific indicators", a systematic monitoring and evaluation of the activities has not been implemented. This lack of an overarching evaluation is problematic, in particular as new governmental initiatives as the HTAD have been set up by the Federal Government recently. It is mandatory to evaluate the (cost-)effectiveness of past activities before deciding on new measures and initiatives.

2.2 France

The French Government launched a 5-year strategy in 2021 as part of its global "France 2030" strategy for innovation. As for the German strategy, the French plan also involves a variety of ministries, such as defence, economy, research etc. However, the French Government has created a position within the General Secretariat for Investment (SGPI) in charge of coordinating this strategy, which proves to be efficient.

National quantum strategy

The French national quantum strategy has allocated €1.8 billion including €1.5 billion of public funding. The French audit focuses exclusively on quantum computing, which accounts for 86 percent of global funding. The main three goals of the national strategy are:

→ To develop a pilot quantum computer by 2030, capable of solving problems beyond the reach of current supercomputers.

[10] (Retrospective) performance studies generally include the following assessments: (1) Goal achievement assessment: Were the goals achieved? (2) Impact assessment: Were the goals achieved as a result of the measure? (3) Cost-effectiveness assessment: Were the goals achieved in a cost-effective manner?

[11] According to the SMART-concept, objectives and the achievement of those objectives must be **S**pecific, **M**easurable, **A**chievable, **R**ealistic and **T**ime-bound.

→ To master the entire value chain, from qubits to enabling technologies, including the software and algorithmic layers.
→ To leverage national champions, led by the relevant national research organisations involved in the field, as well as the emerging French start-ups.

The strategy also aims to establish a sovereign quantum industrial sector. It therefore supports fundamental research while fostering the emergence of innovative companies and integrating well-established industrial players.

Quantum houses

To enable the economic sector to seize the opportunities offered by quantum technologies, the French Government launched a regional initiative called the "Quantum houses". The goal is to build local networks around quantum computing, providing funding over three years and facilitating national, European and international networking.

QuanTEdu-France

Another key challenge is the development of skills and training. In response to the growing demand for talent and to train the next generation of quantum researchers, engineers and technicians, the national strategy includes the "QuanTEdu-France" initiative, designed to strengthen training programmes and build a sustainable expertise ecosystem.

Assessment and monitoring

The Quantum National Research Programme's terms of reference were initiated by the three national research organisations leading the programme and approved by the Ministry in charge of research, following several rounds of consultation. This balance between curiosity-driven and directed research has made possible to draw up an ambitious but realistic roadmap. Private and public research donors have also been given direction from government to better align their spending with national priorities.

The French strategy dedicates a part of its means to research projects through this Quantum National Research Programme. With a budget of €142 million, it constitutes the main source of public support for research. It helps bridge fundamental research, which aims to produce new knowledge without immediate applications, and applied research, which targets specific goals within a defined timeline. This balance between fundamental R&D is essential for a breakthrough innovation.

The monitoring is done for each research project either by the National Agency of Research or the French Public Investment Bank (Bpifrance). Each project is subject to monitoring against technical milestones, as well as other indicators, including environmental and employment-related milestones. Financial monitoring is also undertaken to ensure the proper use of public funds.

The main programmes, which gather several projects, are monitored by a steering person. The SGPI has also a look on these indicators and checks the overall picture.

With the exception of some details concerning the recipients of the National Agency of Research, the monitoring is accurate and regular. The result of this monitoring is that the achievement of almost all the projects is still on time (just one or two have been cancelled or delayed).

Nevertheless, the monitoring of indicators remains insufficiently effective due to their large number. If, at the project's level, the indicators are accurate and milestones clearly defined, it remains difficult to have an overall view with a dedicated dashboard at the level of the strategy. In addition, delays in the allocation of funding for quantitative indicators further complicate effective monitoring and assessment.

A mid-term evaluation of impact has already been conducted, but only on the Quantum National Research Programme (PEPR Quantum). A global evaluation of the entire strategy has not yet been carried out. However, a global scientific evaluation of the entire strategy would be very useful prior to setting up any subsequent plan.

2.3 Findings and joint recommendations

France and Germany pursue their respective strategies to advance quantum technologies. Quantum computing constitutes a key pillar of both strategies. Both countries seek to establish a leading position in the field of quantum technologies while fostering a technologically self-sufficient ecosystem. However, both countries need to focus more on clearly defined objectives and on robust evaluation in order to prove the effectiveness and economic efficiency of their initiatives. Recently, there have been attempts to better standardise the indicators used to conduct monitoring and evaluation in the quantum field.[12] Using such indicators could help to compare the results achieved across the EU, provide a better overall picture and enable countries to learn from each other's experiences.

[12] See e.g. Strategic Advisory Board of the European Quantum Flagship and the European Commission (2025): Key Performance Indicators for Quantum Technologies in Europe; Quantum Technology and Application Consortium – QUTAC., Binder, J., Hachmann, L. et al. (2024): A KPI framework to standardise the measurement of a country's progress in bringing quantum computing into application, EPJ Quantum Technol. 11, 38.

Recommendations

Governments should

→ define goals and milestones that are specific and measurable, in accordance with the SMART criteria;
→ conduct an overarching evaluation to assess the success of the programmes. Even where the subject matter is undergoing significant change, lessons learned should be incorporated into subsequent programmes.

3 Governance and steering

3.1 Germany

In Germany, different ministries provide funding for programmes that support research in quantum technologies. In 2021, a dedicated governance structure was set up to improve coordination of activities at the ministerial level.[13]

This governance structure consists of the "roundtable on quantum technologies at state secretary level" and the "interdepartmental steering group on quantum technologies". Whereas the roundtable at state secretary level is responsible for the political control of the activities, the interdepartmental steering group focuses on economic and research policy questions. Both bodies include representatives from different ministries.[14] The ministerial level is supported by a Scientific Advisory Board that consists of representatives from academia and the business community.

Although these governance structures were put in place, they have proven not to be sufficiently effective. The Bundesrechnungshof revealed that the scope, mandate and decision-making authority are insufficient. For example, in 2024, the roundtable at state secretary level failed to secure the support of all the relevant ministries for a new interdepartmental strategy for setting future priorities in quantum computing.

[13] Due to its mandate, the audit work of the Bundesrechnungshof is limited to the federal level. Quantum initiatives financed by the Länder are not covered in this report. Schmaltz, Thomas et al. (2025): Quantentechnologien und Quanten-Ökosysteme, Studien zum deutschen Innovationssystem, No. 7-2025, EFI, Berlin give an overview of the activities at the Länder-level.

[14] Ministries represented in the interdepartmental steering group: BMFTR, BMWE, Federal Chancellery, Federal Ministry of the Interior; ministries represented in the roundtable: BMFTR, BMWE, Federal Chancellery; Federal Ministry of the Interior; Federal Ministry of Finance; Federal Ministry of Defence.

Furthermore, the interdepartmental exchange within the aforementioned structures has not taken place in recent months. This is particularly problematic because quantum technologies are expanding quickly and into an increasing number of areas.

In May 2025, the quantum section of the Federal Ministry for Economic Affairs and Energy (BMWE) was transferred to the BMFTR. As a result, lead responsibility for funding quantum technologies now rests with a single ministry. Although this can be considered as an advantage in terms of coordination and harmonisation of initiatives and funding schemes, the audit revealed that the integration has progressed slowly. In June 2026, the BMFTR finally decided on the responsibilities for the funding of quantum technologies within the reorganised ministry structure. Decisions on possible changes to interdepartmental governance structures are still pending.

3.2 France

Similarly to the German governance framework, the French national quantum strategy also relies on several ministries and public actors. The strategy is primarily coordinated by the SGPI, with contributions from the French Ministry of Higher Education and Research and the various national research organisations, organised under the National Research Agency. As part of the “France 2030” strategy, the national quantum strategy combines interdepartmental committees overseeing the overall strategy with operational committees dedicated to its implementation.

This overlap and the large number of actors involved result in administrative complexity. In addition to the research sector, public actors in the field of defence are also involved, including the Armed Forces Ministry and the General Secretary for defence and national security.

The Ministry of Economy addresses another major challenge of the strategy via the actions of the “Direction Générale des Entreprises”: ensuring that the private sector adopts the technologies. Its role is less about funding and more about raising awareness, providing support, protecting against theft and fostering collaboration (for example, by facilitating access to computing resources and coordinating local networks). However, this effort is still poorly structured, with limited monitoring of the existing initiatives.

In order to address this administrative complexity and ensure that all aspects of the strategy are covered, the French Government has created a new position: the National Coordinator of the Quantum Strategy, within the SGPI. With regard to the quantum technologies specifically, the National Coordinator contributes to the overall coherence of the strategy by coordinating interdepartmental actions through scheduling committee meetings at regular intervals, monitoring progress and facilitating collaboration between public actors and the private sector. However, the success of

this action depends on experts dedicated to this very subject. Such an effective coordination structure within the SGPI and across the ministries does not exist in all policy areas.

3.3 Findings and joint recommendations

The audits highlight that a transparent and effective governance framework is crucial for managing the increasingly cross-cutting nature of quantum technologies, which depend on sustained coordination and cooperation across science ministries, economic and innovation agencies, industry actors, and a wide range of other organisations. By assigning responsibility for quantum strategy to the highest executive level, France highlights the strategic importance of quantum technologies. In Germany, a complex governance structure was established, but it has not yet been able to satisfactorily fulfil its role in providing effective interdepartmental coordination and timely decision-making. With the reorganisation of the Ministry, there is a window of opportunity to renew and adapt the previous governance structure.

Recommendations

Governments should set up

→ a robust governance structure that involves all key stakeholders at the ministerial level as well as representatives from industry and academia;
→ clear overall responsibilities and decision-making authority between all involved ministries and public bodies.

For Germany, a dedicated governance structure with the authority and resources to oversee all government-related activities should be considered.

4 Source of funding

4.1 Germany

The BMFTR provides public and private sector organisations with funding for quantum technology research. Funds are available for individual projects, as well as for institutional funding, which can be used for quantum research. The funds do not need to be repaid.

For the period 2023 to 2026, the Federal Government planned to provide a total of €3 billion to promote quantum technologies. Of this amount, €2.18 billion was to be allocated to project funding, and €850 million to institutional funding.

The project funding shall include additional funds taken from the economic stimulus and crisis management package that was adopted in response to the coronavirus pandemic.

The Special Fund for Infrastructure and Climate Neutrality, in place since 2025, runs until 2036 and includes further funding for the promotion of quantum technologies. Consequently, the BMFTR has a total of €421.7 million in project funding available for the promotion of quantum technologies in 2026. Of this amount, €246.7 million comes from the ministry's regular budget, and €175 million from the Special Fund for Infrastructure and Climate Neutrality.

Figure 1

BMFTR budget for quantum technology research

The diagram shows the budget trend for quantum technology research from 2021 to 2026. Due to the establishment of the Special Fund for Infrastructure and Climate Neutrality there is a significant increase in funding as from 2025.

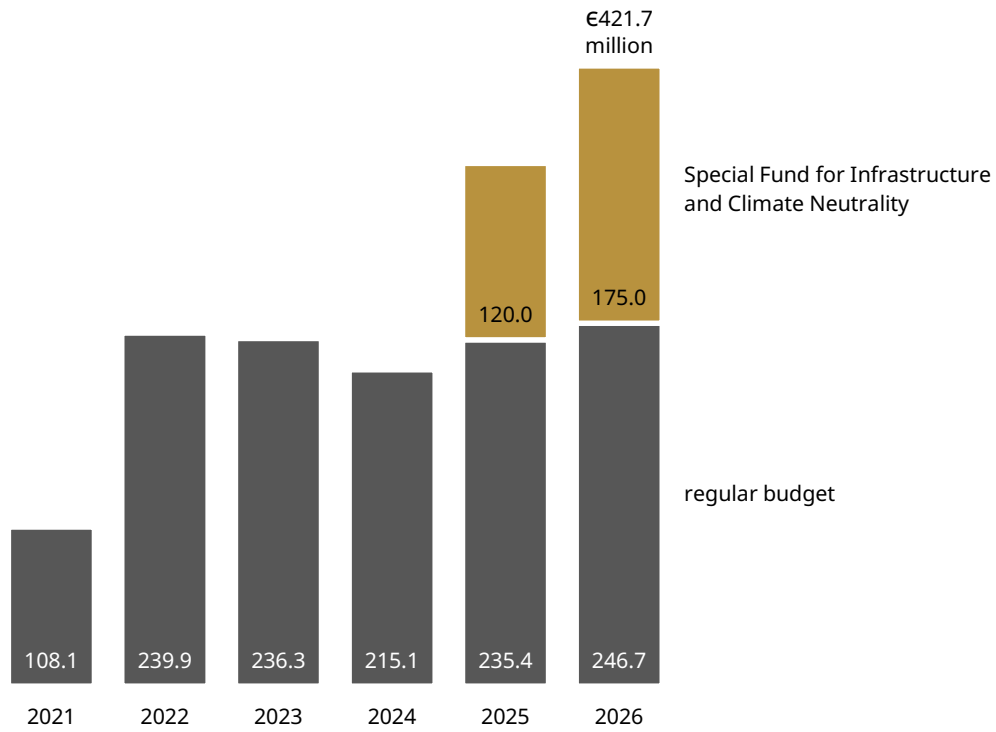

Figure: Bundesrechnungshof. Source: Federal Ministry of Finance.

Other ministries also provide funding for quantum technologies. The budget shown here only refers to the BMFTR.

4.2 France

The French national quantum strategy is funded through a combination of public and private funding, with the majority coming from public sources (€1.5 billion out of the €1.8 billion total is attributable to public funding). Funding is coordinated by the SGPI while calls for proposals are organised by the National Research Agency for the public sector or Bpifrance for the private sector. By mobilising a wide range of national instruments (Investment for the Future Programme, France Relance, France 2030, investment loans), the National Research Agency is able to support projects at different stages of maturity, from ground research to innovation, while also taking direct investments in start-ups. This funding is primarily based on non-permanent investment flows. They are time-limited funding packages covering periods of four to six years dedicated to research or innovation and monitored by the SGPI.

In total, the SGPI manages €600 million of public funding for quantum computing projects, all of which are subject to complex co-financing arrangements. These arrangements are illustrated by the gold-coloured bars in the upper section of the following chart. All credits were committed by the end of 2025 as planned, although around half of the payments are yet to be made. In a speech in May 2026, the President of the Republic announced that €1 billion should be allocated to quantum technologies until 2030. The details of this budget, such as the proportion dedicated to quantum computing is still unclear. The amount for each year is not specified either. But the funding should come from France 2030.

Figure 2

French budget for quantum computing and enabling technologies (of quantum computing)

The diagram shows the budget trend for quantum computing and enabling technologies (of quantum computing) from 2019 to 2025. As a result of the France 2030 Funding programme, there is a significant increase as from 2022.

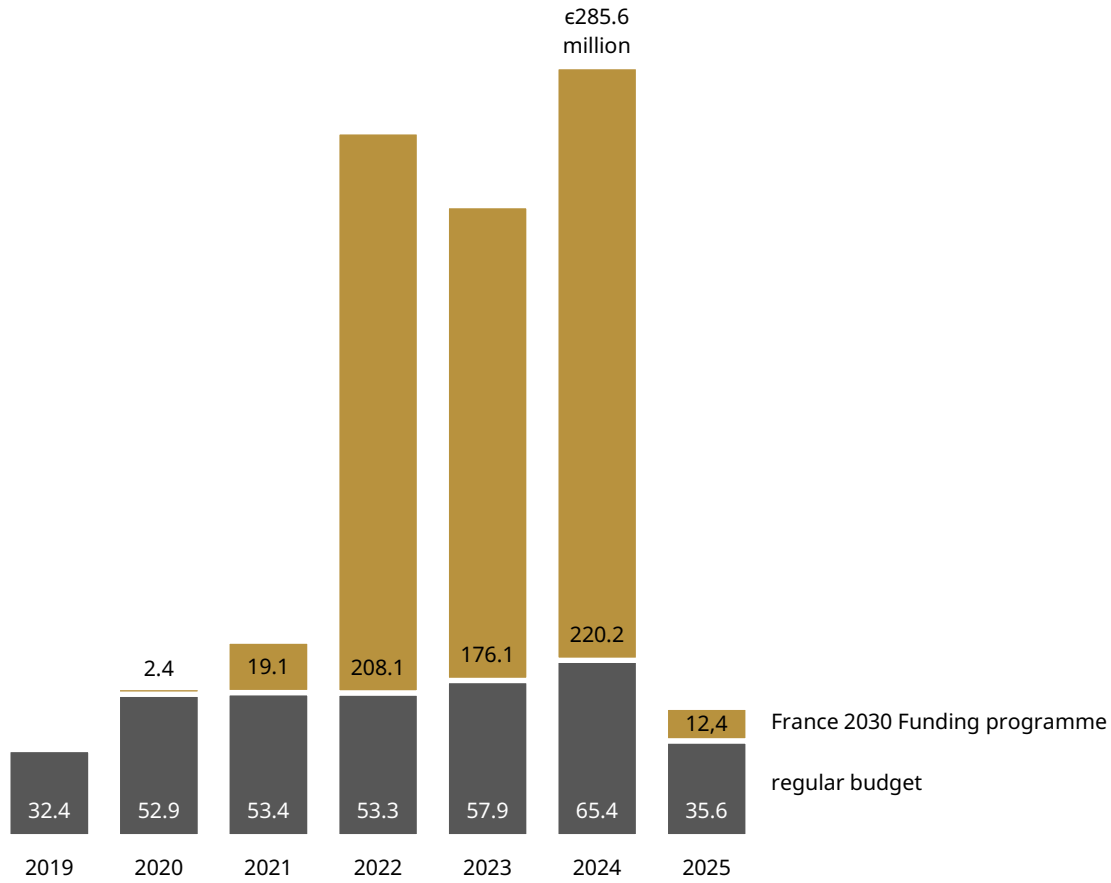

Figure: Bundesrechnungshof. Source: Cour des comptes.

Some regional funding is also allocated. In addition to the national strategy, the French Public Investment Bank funds regional calls for proposals to support start-ups, for a total amount of €1.9 million over the period 2018–2025. Furthermore, the regions are also often partners in local projects, supporting innovation and employment even if the amounts of their support are quite limited because of their resources.

The European funding is also used as a complement. However, the proportion of European funds allocated to French projects on quantum technologies is lower than France's share of the European budget. This shortfall affects the entire European

research funding allocated to France and is not specific to quantum technologies, or more specifically, quantum computing.

The public research centres also contribute with their own funding to these projects. This share is very difficult to estimate as it is monitored by the research agencies themselves. The main research agencies for quantum computing are: the National Scientific Research Council, the Alternative and Atomic Energies Agency and the National Institute for Research in Digital Science and Technology. The grey bars in the chart above underestimate the true scale of this contribution, as they only reflect regular budget funding.

Tax incentives, particularly on research jobs, also help to support the growth of the quantum computing industry. Namely, emerging start-ups benefit from a tax support programme called the “credit impôt recherche” (tax credit mechanism).

4.3 Findings and joint recommendations

Unlike in Germany, where funding is generally provided as a non-repayable grant, France also offers repayable loans. In both countries, certain research institutions receive ongoing funding that they can use to conduct quantum technology research themselves. Furthermore, in Germany and in France, funding is provided from various government budgets. In both countries, however, there is an imbalance between the regular budget and the special budget for quantum technologies. In France, this special fund even exceeded the amount of the regular budget between 2022 and 2024. Given the significance attributed to quantum technologies, a substantial regular budget would be important to ensure long-term funding.

Recommendations

Governments should ensure that

→ the financing is needs-based, as required to achieve set goals;
→ the financing comes primarily from core budgets, rather than special funds, in order to ensure long-term and transparent funding.

5 Funding allocation mechanisms

Since quantum technologies are highly complex, long-term, and capital-intensive, supporting these technologies requires significant financial investment. As shown in chapter 1, Germany and France have invested substantial public funds to promote quantum technologies.

5.1 Germany

The promotion of research in quantum technologies is mainly organised through the provision of funding in the form of non-repayable grants, which are typically part of project funding with specific terms.[15] Such funding is generally based on research programmes, such as the BMFTR's Quantum Systems Research Programme published in 2022. In recent years, the BMFTR has published various funding guidelines to allocate its grants to research organisations, higher education institutions, companies and others. Funding is generally awarded based on a competitive assessment of project proposals against predefined funding criteria.

With the adoption of the "Concept for the 2020 economic stimulus and future package" (see chapter 2), additional funding of €740 million for quantum computing was granted to the German Aerospace Centre (DLR) by the BMWE.[16] DLR used these funds to build up the DLR Quantum Computing Initiative (DLR QCI). In order to strengthen the quantum computing ecosystem, the DLR relies on competitive public procurement. Specifically, it advertises research contracts in public tendering procedures and awards them to start-ups, companies, and research institutions. It thus "orders" from companies and research institutions according to its needs. This indirectly makes the public sector an "anchor customer" of quantum technologies.

In its HTAD, the Federal Government has recently announced plans to continue supporting the purchase of quantum computers. At the same time, the funding for the DLR QCI will expire by the end of 2026. Although the BMFTR has announced to continue the "anchor customer purchase" under a new funding scheme, the modus operandi of how it will use public procurement in the future remains still vague. The BMFTR's decision regarding the continuation of this funding instrument should be based on its suitability for achieving the objectives as effectively as possible. To make that decision, retrospective evaluations of the expiring initiative are necessary.

[15] This funding is complemented by institutional funding for public research institutions.
[16] Due to budget consolidation, this amount was reduced to €540 million in 2024.

5.2 France

Bpifrance plays a structuring role for companies by assuming a level of risk suited to innovative technologies. However, the timeframes for awarding grants remain too long. The organisation of France 2030 is complex in this regard: it is composed of a three-level structure involving the thematic operator implementing the calls for proposals, the operational ministerial committees validating project selection, and the executive committee for projects with funding exceeding €10 million. This process generates delays, particularly as decisions must be formally approved by the Prime Minister. Enhancing subsidiarity in project selection and funding could be a possible area for improvement.

Most of the funding is allocated following a call for projects, so the best projects are selected by a panel of experts. This mechanism allows a balance between curiosity-driven research and target-oriented research. In the quantum computing sector, the French Government has guided research by channelling funds into a multi-pronged strategy. The main pillars of the strategy include:

→ Training: the national strategy has supported grants for PhD students and some new trainings
→ Infrastructures
→ Funding a share of wages for ground research, R&D, and innovation.

The public support focuses on the different research players and takes the form of:

→ Public grants, largely allocated through calls for projects, represent the main instrument of public support for quantum computing and are directed predominantly towards public research institutions. As investors are generally reluctant to fund high-risk, early-stage research, government funding seeks to address a market failure by providing non-repayable grants to quantum research projects whose outcomes remain uncertain.
→ Public procurement, which remains relatively limited, with up to €500 million available in two tranches. This funding allocation is already competitive, as it provides companies with long-term visibility while allowing the French Government to steer R&D priorities. Funding allocation could be improved by adding further selection stages and focusing support on the most promising candidates. In France, one example of such a funding allocation mechanism has already been tested successfully. Such a mechanism could play a larger role within the overall funding landscape. It encourages competition and enables resources to be concentrated on the most promising projects, as support is allocated through a staged process. At each stage, funding is concentrated on the most promising projects based on the results achieved.
→ The balance between public subsidies and repayable advances could be adjusted in order to improve the efficiency of public support. This French mechanism is more

akin to a preferential-rate loan and is designed to help beneficiaries manage cash-flow constraints over the life of a project. If projects are successful, the advances are repaid to the government. However, care must be taken to ensure that the mechanism does not create unintended incentives to avoid repayment and that it is not used for projects that are too risky.

→ The public support includes as well tax revenues that are not collected and specific to start-ups or research jobs, as already mentioned.

5.3 Findings and joint recommendations

Germany and France use similar funding schemes to support the quantum environment, especially non-repayable grants and also, to a lesser extent, public procurement.

Using different funding mechanisms can be a suitable and efficient way to realise the strategic visions outlined in the national programmes. Whereas the French audit on quantum computing suggests to expand the use of public procurement alongside public funding, Germany has made important experiences with this mechanism in its DLR QCI. Nevertheless, the role and design of public procurement for the future funding of quantum technologies remains unclear. There is a need for comprehensive evaluation of past initiatives before deciding as to what extent this funding mechanism will be used in the future.

Besides ”traditional“ grant-based funding, Germany established the Federal Agency for Disruptive Innovation (SPRIND) in 2019, as a private-law company wholly owned by the German Federal Government. SPRIND is intended to support companies in developing breakthrough innovations. To this end, it can make use of private-law financing instruments and acquire stakes in companies. SPRIND has recently launched a quantum initiative.

In June 2026, the Franco-German Task Force on Breakthrough Innovation[17] has recommended establishing a dedicated French breakthrough innovation entity drawing on the principles and operating model of SPRIND, and being interoperable with it. The proposed French entity should complement, rather than duplicate, existing research and innovation funding instruments, with a specific mandate to support technologies that require longer time horizons, higher risk tolerance and more flexible forms of financing.

[17] Report of the Franco-German Task Force on Breakthrough Innovation.

Recommendations

Governments should

→ use various funding mechanisms that are aligned with identified needs and government objectives;
→ review existing funding mechanisms to assess their effectiveness and appropriateness;
→ promote the exchange of good practice to learn from experience gained with various funding mechanisms and funding models in other countries.

6 Sovereignty and European-scale partnerships

EU objectives in the field of quantum technology development

Over the last decade, the European Union has launched several initiatives in the field of quantum technologies, ranging from funding fundamental research to developing shared strategic infrastructures. The European Union's support for quantum technologies aims to strengthen Europe's scientific excellence and build long-term technological sovereignty. In the long term, quantum technologies are expected to enhance Europe's economic competitiveness, digital security, and capacity to address major societal challenges.

In 2025, the EU strategy "Quantum Europe Strategy: Quantum Europe in a Changing World" was officially published by the European Commission. The strategy responds to growing international competition as well as geopolitical and security challenges.

As part of its efforts to advance Europe's quantum ambitions, the European Commission has announced the publication of a European Quantum Act in 2026. It will be an EU legislative framework to implement and legally anchor the EU's quantum strategy.

EU-wide cooperation as a response to increasing international competition and challenges

Nevertheless, these initiatives have emerged quite late compared to international technological progress and existing national strategies, as highlighted, *inter alia*, by the report *Future Directions for Quantum Technology in Europe*[18] published in 2025.

Although figures show that some individual European countries are among the top ten in quantum technologies – e.g. Germany and France hold top positions in international publication rankings for quantum computing – the data also reveals that they have difficulties to catch up with leading international players – particularly the USA and China.[19] This is especially true when it comes to industrial scaling and commercialisation of these technologies. To succeed in this highly competitive environment, a coordinated approach at the EU level should be pursued. Statistics show that the EU as a whole is indeed a serious competitor in the field of quantum technologies.

High complexity in governance

Despite significant investments in quantum technologies in Europe – exceeding €11 billion over the past five years[20] – the European Commission has self-critically acknowledged that Europe's quantum technology efforts remain fragmented across Member States and funding bodies. The Commission concluded that limited coordination between national strategies has led to duplication of activities, inefficient resource allocation, and intensified competition for talent.[21]

Coordination at the European level

So far, the overall structure of EU funding for R&D in the field of quantum technology has proven to be complex, with dedicated quantum initiatives (European Quantum Flagship, QuantERA, EuroQCI), broader technological initiatives[22] as well as other innovation support and research funding schemes. All of them also encompass the

[18] Lewis. et al. (2025), Future Directions for Quantum Technology in Europe - An analysis of policy questions, Publications Office of the European Union, Luxembourg.

[19] See e.g. EFI (2025): Report on Research, Innovation and Technological Performance in Germany 2025, Berlin; European Patent Office (EPO)/Organisation for Economic Co-Operation and Development (OECD) Mapping the global quantum ecosystem: A comprehensive analysis based on innovation, firm, investment, skills, trade and policy data, EPO, Munich/OECD Publishing, Paris.

[20] Total investments in quantum technologies of the EU and the Member States in quantum technologies since 2019, see Communication from the Commission to the European Parliament and the Council (2025): Quantum Europe Strategy: Quantum Europe in a Changing World, COM(2025) 363 final.

[21] Ibid, page 4.

[22] European High Performance Computing Joint Undertaking, Chips Joint Undertaking, Photonics 21, European Association of National Metrology Institutes.

funding of quantum technology projects. European projects would benefit from better coordination and structuring around specific sectors.

Coordination between the European and national levels

A common finding across recent policy papers and strategic documents is that stronger coordination between EU institutions and Member States is needed to avoid fragmentation, leverage synergies, and establish a competitive European quantum ecosystem.[23] At the same time, however, the nation-states are also competing with one another when it comes to the development of quantum technologies, which also complicates cooperation and harmonisation of funding initiatives at the EU level.

In the absence of consensus among all 27 EU Member States, bilateral and multilateral collaborations should also be encouraged to emerge. As an example, in May 2025 a French-German-Dutch trilateral call was published, which marked an important step towards strengthening European leadership in this field.

French-German-Dutch trilateral call for quantum innovations

The first trilateral call for proposals on quantum innovations was launched in March 2024 by Germany, France, and the Netherlands and successfully concluded in 2025. It represents the first coordinated, cross-border funding initiative by these three countries in the field of applied quantum technologies and mobilised a total funding volume of over €30 million.

The focus was on establishing transnational consortia of research institutions and companies to accelerate the transfer of quantum technologies from research to concrete applications.

Multi-stakeholder dialogue is another key to advancing Europe's quantum sovereignty, as illustrated by the French-German Dialogue of Quantum Technology Players launched in 2025.[24]

French-German Dialogue of Quantum Technology Players

The initiative brings together industry, research and start-ups from France and Germany (including the French Alternative Energies and Atomic Energy Commission, Fraunhofer-Gesellschaft, French National Centre for Scientific Research, French National Institute for Research in Digital Science and Technology, Le Lab Quantique, Quandela, Quantum Technology & Application Consortium and the European Champions Alliance) across the entire quantum value chain to identify and articulate

[23] See e.g. EFI (2025): Report on Research, Innovation and Technological Performance in Germany 2025, Berlin.
[24] French-German Dialogue of Quantum Technology Players.

the ecosystem's needs to decision-makers while stimulating cross-border collaboration and aligning efforts.

The EU Quantum Act is scheduled for 2027. This legislation aims to address the overlaps and administrative complexities resulting from the multiplication of European and national initiatives by establishing a clear legal and operational framework for the development of quantum technologies. In its Quantum Europe Strategy, published in 2025, the Commission already stated that it would strengthen the governance at the EU level. It announced to install, *inter alia*, a "structured cooperation framework with the Member States [that] will help ensure coherent implementation across the EU level and national programmes, coordinate annual lifecycle progress across the five strategic areas, and monitor the evolution of the security and resilience of quantum supply chains and its critical components."[25]

Joint French-German position paper on the European Quantum Act

In July 2026, the German and French governments signed a joint position paper outlining their shared vision for the upcoming European Quantum Act. France and Germany call for a strong European Quantum Act that combines coordinated public procurement, targeted financing, and strategic investments to build a sovereign and globally competitive European quantum industry. They also recommend strengthening research, talent, infrastructure, governance, and international cooperation while safeguarding European technological autonomy and leadership across the full quantum technology ecosystem.[26]

Recommendations

Governments should

→ foster European cooperation taking into account the specific strengths of Europe and its Member States;
→ support, where appropriate, collaboration between those European countries that wish to strengthen their cooperation in quantum technologies;
→ continue to advocate for a clear, transparent and simple governance structure at European level in the negotiations on the proposed European Quantum Act;
→ promote greater harmonisation of existing structures and funding schemes through close coordination between the relevant actors at European and national levels.

[25] Communication from the Commission to the European Parliament and the Council (2025): Quantum Europe Strategy: Quantum Europe in a Changing World, COM(2025) 363 final, page 21.
[26] France and Germany: Joint Position Paper on the European Quantum Act.

7 Conclusion

The parallel audit made it possible to identify both similarities and differences between French and German funding approaches to quantum technologies. On the basis of these findings, recommendations have been made. It is important to implement these recommendations and improve research funding in this area, as quantum technology is regarded as a key enabling technology with high potential for the future.

Quantum technologies are evolving at a rapid pace, and both countries must continue to refine and strengthen their respective strategies in this field. France and Germany have each developed national approaches that involve a wide range of stakeholders, governance mechanisms, and performance indicators. In order to improve clarity, comparability, and effective implementation, strategic objectives could be aligned more closely with EU guidelines and objectives, and governance structures could be simplified. Given the large number of stakeholders these strategies also require robust coordination through a dedicated institution or a clearly identified national coordinator. The use of common indicators defined at the European level could further enhance coordination, monitoring, and evaluation.

In order to achieve these objectives financing must be aligned with the ambitions set out in the strategies. To ensure predictability and long-term impact, such funding should rely on stable core budgets rather than temporary or special funds.

France and Germany already rely on broadly similar funding instruments, in particular non-repayable grants and, to a lesser extent, public procurement to support the quantum technology ecosystem. While the use of diverse funding mechanisms can be an effective way to implement national strategic priorities, the role of public procurement in the future financing of quantum technologies should be further clarified.

In the context of intensifying global competition, Germany and France could further collaborate to develop a more coherent and ambitious joint strategy at the EU level in order to safeguard their technological sovereignty and ensure their long-term competitiveness.

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