

2022

Annual report on EU Joint Undertakings for the financial year 2022



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OF AUDITORS

EN

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Chapter 1

The EU Joint Undertakings and the ECA's audit

Introduction

1.1. The European Court of Auditors (ECA) is the external auditor of the EU's finances¹. In this capacity, we act as the independent guardian of the financial interests of the EU citizens, by helping to improve the EU's financial management. More information on our work can be found in our activity reports, our annual reports on the implementation of the EU budget, our special reports, our reviews, and our opinions on new or updated EU laws or other decisions with financial management implications.

1.2. Within this mandate, we carry out an examination of the annual accounts and the underlying transactions for EU Joint Undertakings (collectively referred to as 'Joint Undertakings' or 'JUs'), which are EU bodies set up by Articles 187 to 188 of the Treaty on the Functioning of the European Union (TFEU) and, in the case of the Fusion for Energy (F4E), Articles 45 to 51 of the Treaty establishing the European Atomic Energy Community (Euratom Treaty).

1.3. This report presents the results of our audit of the JUs for the 2022 financial year. The report is structured as follows.

- Chapter 1 describes the JUs, and the nature of our audit.
- Chapter 2 presents the overall results of the audit and an analysis of the JUs' risk-based control system for grant implementation.
- Chapter 3 contains the statement of assurance for each of the nine JUs (see [Figure 1.4](#)), together with our opinions on the reliability of the JUs' annual accounts and on the legality and regularity of the underlying revenue and payments, together with all matters and observations not calling into question these opinions.

1.4. Overall, our audit of the nine JUs for the financial year ended 31 December 2022 confirmed similar results reported to previous years. Through the statements of assurance issued for each JU, we provided:

- unqualified (clean) audit opinions on the reliability of accounts for nine JUs; and
- unqualified (clean) audit opinions on the legality and regularity of the transactions underlying the accounts for nine JUs.

¹ [Articles 285 to 287 of the Treaty on the Functioning of the European Union \(TFEU\)](#), OJ C 202, 7.6.2016, p. 1.

1.5. Nevertheless, we highlighted areas of importance to the reader through other matter or emphasis of matter paragraphs, and identified areas for improvement through the observations, without calling the audit opinions into question.

The EU Joint Undertakings

1.6. JUs are partnerships between the EU, represented by the Commission and private partners from industry and research organisations. In some cases, intergovernmental organisations and Participating States are also involved. The primary mission of JUs is to foster the transformation of scientific knowledge into marketable breakthrough innovations within a strategic vision that the partners share. Moreover, JUs should respond to European social challenges currently insufficiently served by industry.

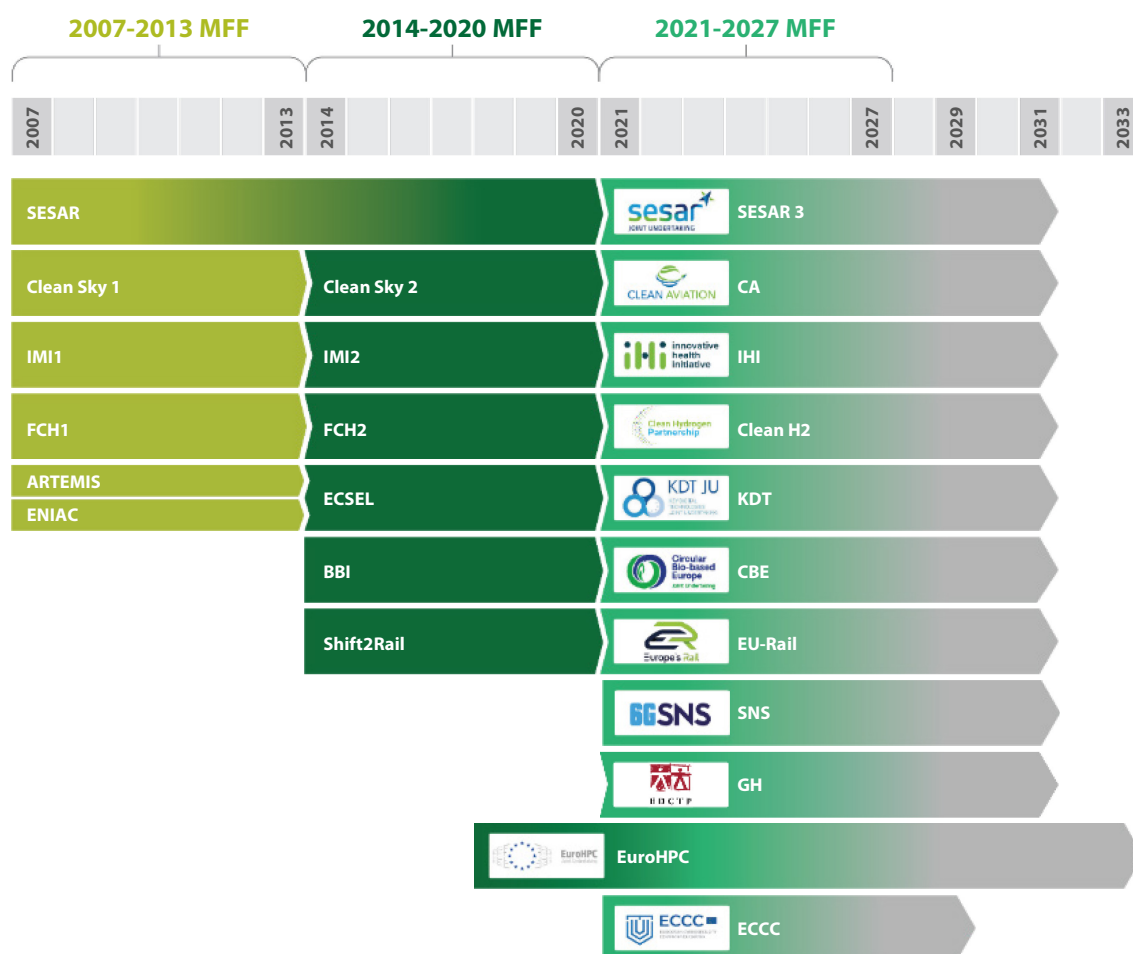
Joint Undertakings operating under multiannual EU research and innovation programmes

Evolution of the JUs operating under EU research and innovation programmes

1.7. Under the Multiannual Financial Framework (MFF) programmes for research and innovation, JUs are set up as EU bodies with separate legal personalities. They adopt their research and innovation agenda in their strategic research area and implement it through calls for proposals or procurements.

1.8. *Figure 1.1* below shows the evolution of the JUs since the creation of the first six JUs under the Seventh Framework Programme for Research and Technological Development (FP7) of the 2007-2013 MFF, the Horizon 2020 and Connecting Europe Facility (CEF 1) programmes of the 2014-2020 MFF, and the Horizon Europe, Digital Europe and CEF 2 programmes of the 2021-2027 MFF.

Figure 1.1 – Evolution of EU Joint Undertakings



Source: ECA based on the Council Regulations establishing the JUs.

1.9. The JUs operating under the 2021-2027 MFF implement their specific research and innovation agenda in transport, energy, health, circular bio-based industries, key electronic components, supercomputing, and network systems. They were established under the Council Regulations detailed below.

1.10. In November 2021, the Council adopted the Single Basic Act, setting up nine JUs to implement actions under the Horizon Europe programme, the multiannual research and innovation programme under the new 2021-2027 MFF. These JUs are established for a period of ten years ending 31 December 2031². Seven JUs that already operated under the Horizon 2020 programme (SESAR, ECSEL, IMI 2, Clean Sky 2, FCH 2, Shift2Rail, and BBI) are continuing under the Horizon Europe programme as new legal entities, with new names and revised remits. In addition, two JUs were newly established: the Smart Networks and Services (SNS)

² Council Regulation (EU) 2021/2085 establishing the Joint Undertakings under Horizon Europe.

and the Global Health (GH), the latter being the successor of the European and Developing Countries Clinical Trials Partnership.

1.11. In May 2021, the European Cybersecurity Competence Centre (ECCC) was established by a separate Regulation³. These three new JUs (SNS, GH, and ECCC), however, will only be audited for the first time after they have obtained their financial autonomy, which is expected in the last quarter of 2023.

1.12. In July 2021, the Council adopted a new founding regulation for the European High Performance Computing JU (EuroHPC)⁴ under the new 2021-2027 MFF, extending its lifetime to 31 December 2033. Under the 2021-2027 MFF, EuroHPC receives significantly more funds from the Horizon Europe, Digital Europe and CEF programmes, to support the acquisition and development of high-performance computing, as well as the upgrading and operation of the infrastructures for supercomputers and quantum computers.

1.13. Finally, in February 2022, the Commission proposed transforming the Key Digital Technologies (KDT) into the future Chips JU. The Council adopted the amending regulation on 25 July 2023. Its enhanced remit will foster the development of innovative next-generation semiconductor technologies and reinforce the European chip-production capability under the “Chips for Europe Initiative” with funding from the Digital Europe programme⁵.

Contributions to the JUs operating under EU research and innovation programmes

1.14. All members contribute to funding the JUs’ research and innovation activities. On the one hand, the Commission provides cash contributions from the EU research and innovation programmes to co-finance the JUs’ research and innovation agenda. On the other hand, private members from industry and research must provide a minimum level of in-kind contributions in the form of “in-kind contributions to the JU’s operational activities” (IKOP) and, in some cases, “in-kind contributions to additional activities” (IKAA). For more detailed information, see [Box 1.1](#). In some cases, Participating States (KDT, EuroHPC and ECCC) or intergovernmental organisations (SESAR and GH) also contribute financially to the JUs’ activities. In addition, legal entities or countries interested in supporting a JU’s objectives in its specific research areas can apply to become associated members or contributing partners. The

³ [Regulation \(EU\) 2021/887](#) establishing the European Cybersecurity Industrial, Technology and Research Competence Centre and the Network of National Coordination Centres.

⁴ [Council Regulation \(EU\) 2021/1173](#) establishing the European High Performance Computing JU and repealing Regulation (EU) 2018/1488.

⁵ [Council Regulation \(EU\) 2023/1782 amending Regulation \(EU\) 2021/2085 establishing the JUs under Horizon Europe, as regards the Chips Joint Undertaking.](#)

EU and the JUs' private members finance the JUs' administrative costs with equal cash contributions, except for EuroHPC for which the Commission bears all costs.

Box 1.1

Private members' in-kind contributions to the JUs' operational activities (IKOP)

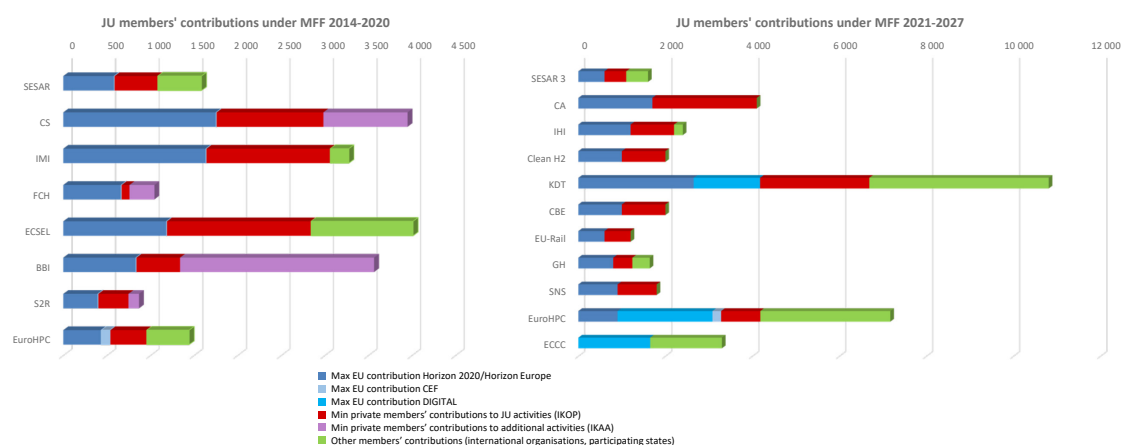
As provided for in the JUs' founding regulations, all private members must contribute a minimum amount to the costs of the JUs' research and innovation projects. Under Horizon 2020, IKOP is the total costs incurred by private members in implementing the JU's research and innovation actions, less the contribution of the other members of the JU (EU co-financing, contribution of Participating States or intergovernmental organisations), as well as any other EU contribution to those costs. Under the Horizon Europe and Digital Europe programmes, IKOP are consisting of the eligible costs incurred by private members in implementing the JU's actions, less the contributions by the JU, the Participating States or any other EU contribution to those costs. The total amount of certified and validated IKOP is recognised in the JU's annual accounts.

Private members' in-kind contributions to additional activities (IKAA)

Under Horizon 2020, private members of some JUs (CS, FCH, BBI, S2R) must also provide a minimum amount of in-kind contributions in respect of costs incurred for "additional activities" outside the JU's work programme and budget, but falling within the scope of the JU's general objectives. Under Horizon Europe, IKAA also includes non-eligible costs of activities directly funded by the JU, less any other EU contribution to those costs. JU's private members have to provide IKAA in addition to IKOP to match EU contributions. IKAA amounts are set out in the JUs' annual additional activities plan. The total amount of certified and validated IKAA is disclosed in the notes to the JU's annual accounts. Therefore, IKAA are not subject to audit by the ECA.

1.15. Figure 1.2 shows the members' contribution targets to the JUs under the 2014-2020 MFF and the 2021-2027 MFF, as set out in the respective founding regulations, including the transformation of KDT into the Chips JU. Under the 2021-2027 MFF, EuroHPC and the Chips JU have the most significant increase in budget.

Figure 1.2 – Members' contribution targets to JUs under EU research and innovation programmes (in € million)

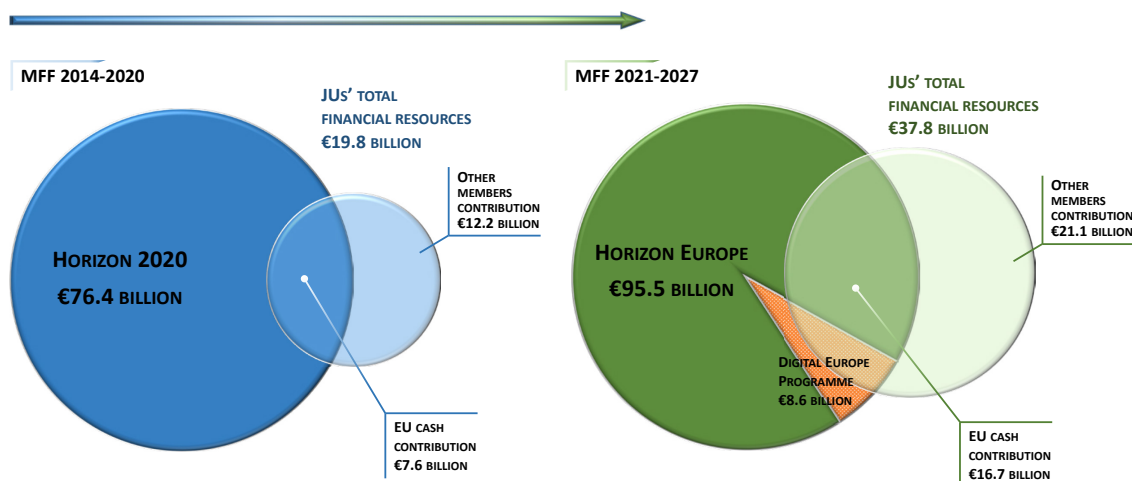


Source: ECA.

1.16. As shown in [Figure 1.3](#), under the 2021-2027 MFF, the Horizon Europe and Digital Europe programmes remain the main financial resource for JUs, with a total budget of €16.7 billion for co-financing their research and innovation activities. Of the total Horizon Europe budget of €95.5 billion, JUs will implement €11.6 billion (or around 12 %). Under the Digital Europe Programme⁶, EuroHPC, ECCC and the Chips JU will receive €5 billion in EU funds – or 58.1 % of the programme’s total funding of €8.6 billion – to implement large capacity-building, deployment and investment projects related to the European Digital Single Market strategy.

1.17. Under the 2014-2020 MFF, the EU funding of €7.6 billion for JUs was expected to leverage €12.2 billion (or 161 %) to achieve research and innovation projects to the value of about €19.8 billion in the research and innovation areas assigned to JUs, including the Participating States’ and international organisations’ direct contributions (see [Table 2.1](#)). Under the new 2021-2027 MFF, the EU funding of €16.7 billion for JUs is expected to leverage €21.1 billion (or 126 %) to achieve research and innovation projects to the value of about €37.8 billion in the areas assigned to JUs, including the Participating States’ and international organisations’ direct contributions (see [Figure 1.3](#)).

Figure 1.3 – Total contributions to JUs and leverage of other members’ contributions



Source: ECA.

Governance models of JUs operating under EU research and innovation programmes

1.18. To ensure strong cooperation and coordination with their respective partners and stakeholders, JUs have an extensive governance structure which in most cases comprises the

⁶ Regulation (EU) 2021/694 establishing the Digital Europe Programme.

governing board, a scientific advisory body, a group of states' representatives, and stakeholder groups active in the research and innovation area of the JU.

1.19. Building upon the same legal structure, each JU has specific characteristics to deal with research and innovation in different sectors. Most JUs follow a bipartite model, with the Commission and the private members from industry and research represented on the governing board and contributing to the JU's operational activities (CA, IHI, Clean H₂, CBE, SNS and EU-Rail). Four JUs follow a tripartite model, in which either Participating States (KDT and EuroHPC) or a leading intergovernmental organisation (SESAR and GH) are also represented on the governing board and contribute to the JU's activities.

European JU for ITER and the Development of Fusion Energy

1.20. The International Thermonuclear Experimental Reactor (ITER) Agreement entered into force on 24 October 2007, when the ITER International Fusion Energy Organisation (ITER-IO) legally came into existence. The ITER-IO is in charge of the implementation of the ITER project with the fusion facilities being built at Cadarache (France).

1.21. The ITER project involves seven global partners: the EU (represented by the European Atomic Energy Community (Euratom))⁷, the United States, Russia, Japan, China, South Korea and India. The EU has taken the lead with a share of 45.4 % of the construction costs. The other ITER members' share is around 9.1 % each. This cost distribution will change in the operational fusion testing phase, with Euratom providing 34 % of the operating costs⁸. The total outlay foreseen by the EU to implement its ITER agreement obligations and the associated activities until 2035 amounts to €18.2 billion (in current values)⁹.

1.22. Through their domestic agencies, the members of the ITER-IO mainly contribute to the project by delivering components, equipment, materials, buildings, and services directly to the ITER-IO (in-kind contributions). They also provide financial contributions to the budget of the ITER-IO (cash contributions). ITER members share the responsibilities for the fabrication of

⁷ The members of Euratom are the EU Member States and the associated states Switzerland and the UK (until 2020).

⁸ The ITER documents "Value estimates for ITER Phases of Construction, Operation, Deactivation and Decommissioning and Form of Party Contributions" and "Cost Sharing for all Phases of the ITER Project".

⁹ Estimates are based on Commission Communication COM(2017) 319 and the related staff working paper SWD(2017) 232, table 4.

key reactor components and the distribution of in-kind fabrication tasks was based both on the interests and the technical and industrial capacities of each of the members¹⁰.

1.23. The European JU for ITER and the Development of Fusion for Energy (F4E) was set up in April 2007 for a period of 35 years as the European Union's domestic agency. One of the main tasks of F4E is to manage the EU's contribution to the ITER project. It coordinates activities and performs the necessary procurements in preparation for the construction of a demonstration fusion reactor and facilities. F4E is mainly financed by Euratom (about 80 %) and the ITER host state, France (about 20 %).

1.24. The Commission's current estimate regarding the total Euratom budget needed for F4E to finance the European part of the implementation of the ITER project and the associated activities up to 2035 amounts to €15 billion (in current values). The ITER host state (France) and the Euratom Member States (including Switzerland and the UK until 2020) are to contribute an additional €3.2 billion (in current values)¹¹.

1.25. The UK withdrew from the EU and Euratom on 31 January 2020. The [Trade and Cooperation Agreement between the EU \(Euratom\) and the UK](#) was agreed on 30 December 2020. This agreement establishes that the UK will participate in and contribute to the EU programmes listed in Protocol I, including the Euratom research and training programme and the F4E's ITER activities. However, as long as the parties do not agree on the Protocol, the UK is neither associated with the F4E's ITER activities nor a member of F4E. Regarding Switzerland, the agreement was not automatically prolonged and therefore ended in 2020.

JUs' payment budgets and human resources in 2022

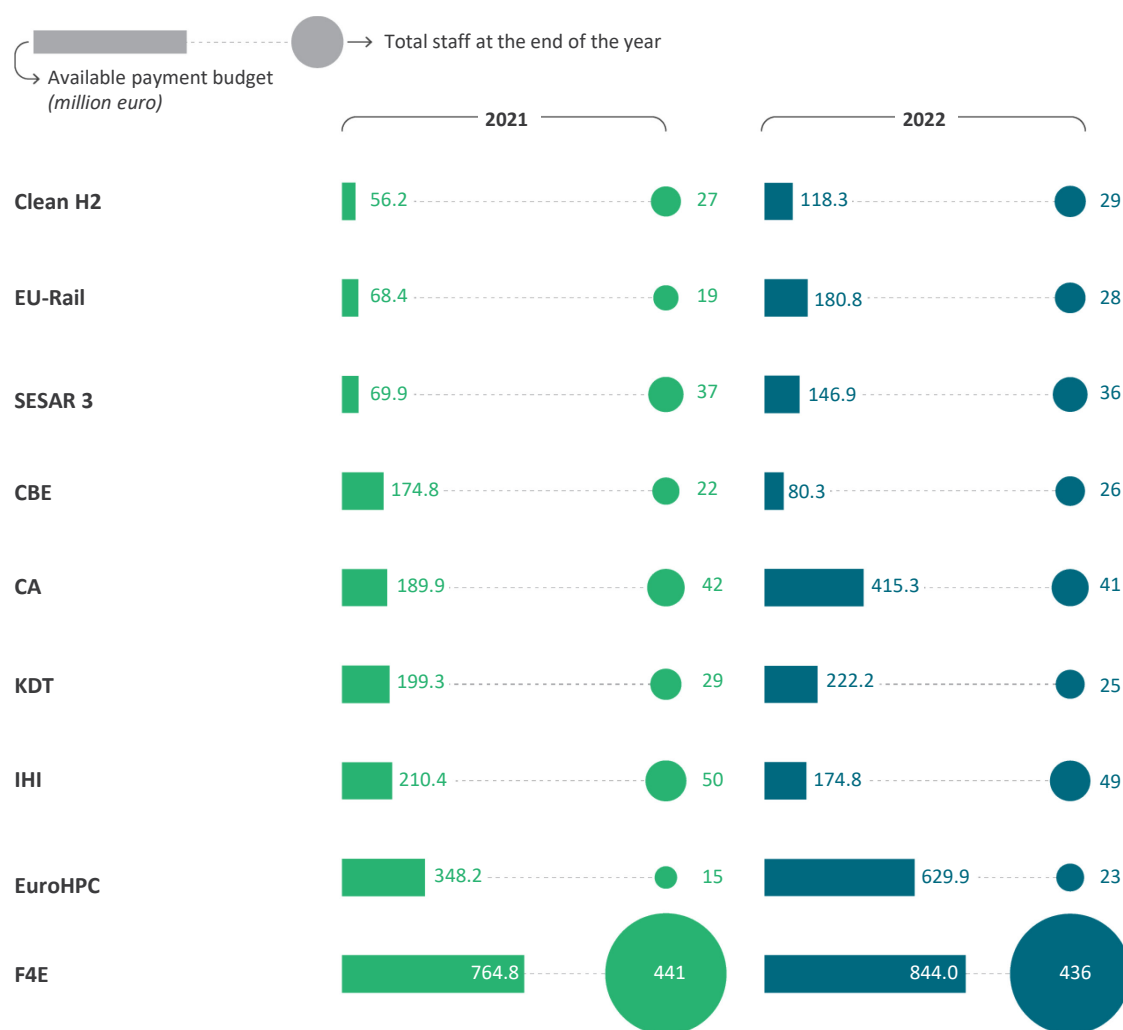
1.26. [Figure 1.4](#) gives an overview of the JUs' specific innovation and research areas, their respective payment budgets and human resources for the 2022 and 2021 financial years. In 2022, the JUs operating under the EU research and innovation programmes had a total payment budget of €2.0 billion (2021: €1.3 billion). F4E's payment budget amounted to €0.8 billion (2021: €0.8 billion). The increase in the payment budget in 2022 for JUs operating under the EU research and innovation programmes is explained by the fact that in 2022, these JUs started implementing the 2021-2027 MFF research programmes Horizon Europe, Digital Europe, and CEF 2.

¹⁰ [ITER.org](https://www.iter.org).

¹¹ Estimates are based on Commission Communication COM(2017) 319 and the related staff working paper SWD(2017) 232, table 4.

1.27. At the end of 2022, JUs operating under the EU research and innovation programmes employed 257 staff (2021: 241 staff). F4E employed 434 staff (2021: 441 staff). These figures include officials, temporary and contract staff, as well as seconded national experts (see [Figure 1.4](#)).

Figure 1.4 – JUs’ payment budgets and human resources in 2022

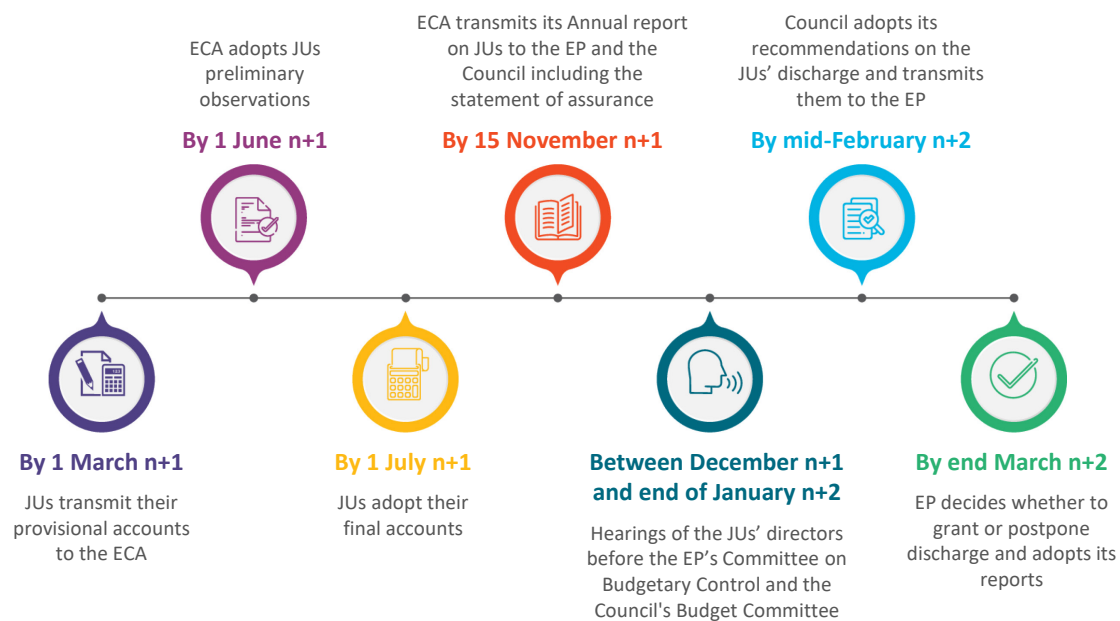


Source: ECA based on JU data.

Budgetary and discharge arrangements

1.28. The European Parliament (EP) and the Council are responsible for the JUs’ annual budgetary and discharge procedures. The timeline of the discharge procedure is shown in [Figure 1.5](#).

Figure 1.5 – Annual discharge procedure



Source: ECA.

Our audit

We issue a statement of assurance for each JU

1.29. As required by Article 287 of the TFEU, we have audited:

- (a) the annual accounts of all nine JUs for the financial year ended 31 December 2022; and
- (b) the legality and regularity of the transactions underlying those accounts.

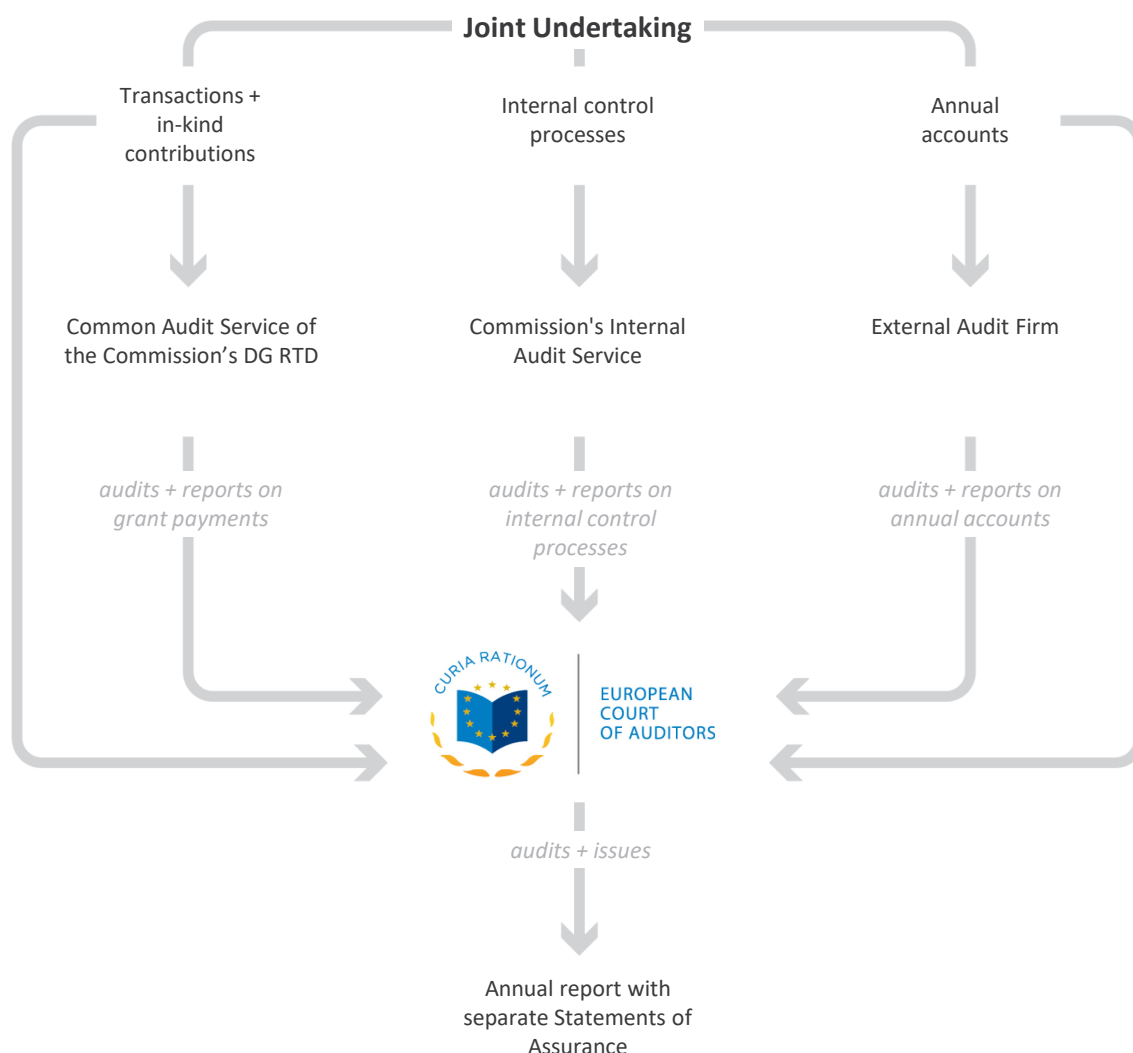
1.30. Based on the results of our audit, for each JU we provide the EP and the Council with a statement of assurance on the reliability of the accounts and the legality and regularity of the underlying transactions. Where appropriate and relevant, we supplement the statements of assurance with audit observations (see [Chapter 3](#)) not calling the audit opinions into question.

We use the audit work of other independent auditors

1.31. Articles 70 and 71 of the EU Financial Regulation require that an independent external auditor verifies the annual accounts of JUs. While all JUs outsourced the audit of the reliability of the accounts to independent external audit firms, all aspects of the independent external audits as well as the establishment of the specific audit report (including the statement of assurance for each JU) remain under the full responsibility of the ECA. We reviewed the quality of the work done by these external audit firms based on international audit standards, and obtained sufficient assurance that we could rely on their work in formulating our audit opinions on the reliability of the JUs' 2022 annual accounts.

1.32. The Commission's Common Audit Service (CAS) performs the ex-post audits of randomly selected interim and final grant payments under Horizon 2020 and Horizon Europe, including the grant payments of JUs implementing research activities. For final payments, the beneficiary must provide a certificate on the financial statement. This certificate is a factual report produced by an independent auditor or Public Officer enabling the Commission or a grant-awarding EU body to check whether costs declared in the final financial statements are eligible. We took account of the results of these audits in formulating our audit opinions on the legality and regularity of the underlying payments. Finally, the Commission's Internal Audit Service (IAS) audits the effectiveness of the JUs' internal control frameworks for key administrative procedures, based on regular risk assessments (see [Figure 1.6](#)).

Figure 1.6 – ECA’s use of other independent auditors’ work



Source: ECA.

Our audit approach is based on the assessment of key risks

1.33. Our 2022 annual audit of the JUs’ annual accounts and underlying transactions was designed to address the key risks we identified in our risk assessment for 2022, which is briefly presented below.

Risk to the reliability of accounts was low to medium

1.34. The Commission provided accounting services to all JUs (with the exception of F4E and CA) up to 30 November 2022. For the 2022 annual accounts, the accounting services were taken over by back-office arrangements created by the JUs. We therefore considered the risk related to the reliability of the accounts of those JUs as medium and as low for F4E and CA.

Risk to the legality and regularity of revenue was low overall

1.35. As the JUs' revenue in 2022 mainly consisted of financial contributions from the Commission's research funds (Horizon Europe and Horizon 2020) and Euratom budget, the risk to the legality and regularity of revenue is low for all JUs.

Risk to the legality and regularity of administrative expenditure was low overall, except for recruitments

1.36. Salary and administrative payments mainly consist of routine payments. Moreover, salaries are administered by the Commission's Office for the Administration and Payment of Individual Entitlements, which we audit within the framework of specific assessments of administrative expenditure. We have found no material errors in relation to staff expenditure in recent years. The risk to the legality and regularity of recruitment procedures was in general low, but raised to medium for EuroHPC and KDT, which had to recruit a large number of staff quickly, to implement their enhanced remits and activities under the 2021-2027 MFF.

Risk to the legality and regularity of operational expenditure was medium overall

1.37. On the basis that beneficiaries' cost declarations are generally complex, and our previous audits have revealed weaknesses in CAS ex-post audits and certificates of financial statements on final grant payments, we assessed the risk related to the JUs' interim and final grant payment as medium.

1.38. For F4E and EuroHPC, the risk related to their operational contract expenditure was assessed as medium due to their complex procurement procedures for high-value contracts.

Risk to budget management was low to medium

1.39. The risk to budget management was categorised as medium for EuroHPC because of weaknesses observed in the budget planning and monitoring process and the complex and lengthy acquisition process for supercomputers. It was also assessed as medium for F4E because of new risks of further delays and cost increases to the ITER project, related to the planned new baseline, delivery problems due to the sanctions on Russia, and delays of the French Nuclear Safety Authority in approving design changes occurring during the assembly process.

Risk to programme implementation was low to medium

1.40. The risk to programme implementation was assessed as medium for EuroHPC and CBE due to the high risk that they may not achieve the minimum contributions targets for their private members by the end of the Horizon 2020 programme. For all other JUs, the risk was assessed as low.

We report suspected fraud to the relevant EU bodies

1.41. We cooperate with the European Anti-Fraud Office (OLAF) in matters related to suspected fraud and other illegal activity affecting the EU's financial interests, and with the European Public Prosecutor's Office (EPPO) in matters related to suspected crimes against the EU's financial interests. We notify OLAF or the EPPO about any suspicion that arises in the course of our audit work, even though our audits are not designed specifically to identify fraud. For the 2022 financial year, we made no notification to OLAF/the EPPO.

Our audit approach for grant payments

1.42. For the grant payments made by the eight JUs implementing research and innovation projects, we supplemented the assurance sought from the CAS ex-post audits with a detailed audit at the beneficiaries (direct substantive testing) for a sample of 32 grant payment transactions. These transactions were randomly selected (monetary unit sample) from a population of all interim and final grant payments made by these JUs in 2022.

1.43. For each JU, we based our opinion on the legality and regularity of the underlying grant payments on separate assessments of the following elements:

- (a) the JU's individual error rate based on the CAS ex-post audit results for its grant payments, including an assessment of the correctness and completeness of the representative and residual error rate calculations;
- (b) the common error rate based on the results of our substantive testing of JU grant payments; and
- (c) the findings related to the transactions of a specific JU within our substantive testing.



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Chapter 2

Overview of audit results

Introduction

2.1. This chapter presents an overview of the results of our annual audit of the JUs for the 2022 financial year, including our analysis of the JUs' risk-based control system for grant implementation, and the results of other cross-JU audit work carried out by us during the same year. Based on our audit work, we suggest various actions to be taken by the JUs.

Clean audit opinions for all Joint Undertakings

“Clean” opinions on the reliability of the accounts for all JUs

2.2. We issued unqualified (“clean”) audit opinions on the annual accounts of all JUs. In our opinion, these accounts present fairly, in all material respects, the JUs’ financial positions as of 31 December 2022, and the results of their operations and their cash flows for the year then ended, in accordance with the provisions of the applicable Financial Regulations and the accounting rules adopted by the Commission’s Accounting Officer.

Emphasis of matter relating to the EU contribution to ITER

2.3. F4E disclosed in the 2022 annual accounts its estimate of the total cost of completing its delivery obligations for the ITER project (“estimate at completion”), assessed at €19.1 billion (in 2022 values). Our emphasis of matter paragraph draws attention to the fact that the 2022 estimate at completion is still based on 2016 milestone and cost assumptions and will be subject to significant revision once the new ITER project baseline and requirements are approved by the ITER Council.

2.4. Russia is a member of the ITER-IO, with the obligations to deliver several components for the ITER project to the ITER assembly site in France (Cadarache) and to provide annual contributions to the ITER-IO. This situation presents a risk of delays and higher costs for the ITER project. We therefore draw attention to (point d) of the “Introduction” to the accounts: “Impact of international situation”, which describes the impact of COVID-19 and the war of aggression against Ukraine on F4E’s operations.

Disclosures by the JUs regarding the war of aggression against Ukraine

2.5. All JUs assessed the impact on their activities of the war of aggression against Ukraine. They disclosed in their annual accounts that the estimated financial effect was not significant.

“Clean” opinions on the legality and regularity of the revenue underlying all JU accounts

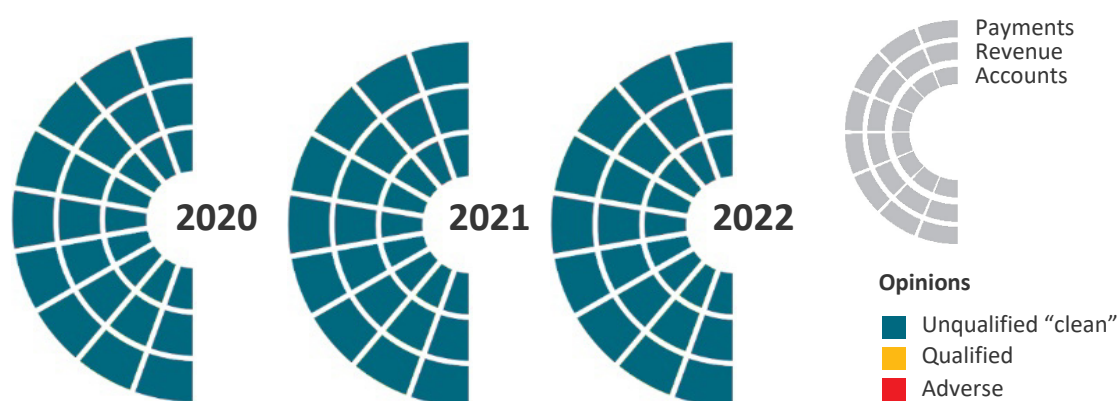
2.6. For all JUs, we issued unqualified (“clean”) audit opinions on the legality and regularity of the revenue underlying the annual accounts for the year ended 31 December 2022. In our opinion, transactions were legal and regular in all material respects.

“Clean” opinions on the legality and regularity of the payments underlying all JU accounts

2.7. For all JUs, we issued unqualified (“clean”) audit opinions on the legality and regularity of the payments underlying the annual accounts for the year ended 31 December 2022. In our opinion, transactions were legal and regular in all material respects.

2.8. *Figure 2.1* gives an overview of the evolution of our annual audit opinions on the JUs’ annual accounts, revenue and payments from 2020 to 2022.

Figure 2.1 – Evolution of the ECA’s opinions on JUs from 2020 to 2022



Source: ECA.

Several areas need improving

2.9. Without calling our opinions into question, we made observations to highlight needs for improvement in the areas of programme implementation, human resources, and the management and control system for payments. A summary of these observations, which are detailed in [Chapter 3](#), is presented below.

Weaknesses in the implementation of the JUs' research and innovation programmes

Finalisation under the 2021- 2027 MFF of a significant part of previous research and innovation programmes

2.10. While also implementing activities under the new research and innovation programmes (Horizon Europe, Digital Europe and CEF 2), several JUs are still engaged on a significant number of projects approved under previous MFFs. However, provided their own lifespan has been subsequently renewed under subsequent MFFs, the JUs have no deadlines for implementing projects funded under previous MFFs.

2.11. Regarding the FP7 programme that was running under the 2007-2013 MFF, at the end of 2022, which is ten years after the end of the programme, IHI still has to pay €45 million (or 5 % of the total value of FP7 grant agreements) in respect of projects yet to be completed.

2.12. Regarding the Horizon 2020 programme under the 2014-2020 MFF, [Table 2.1](#) shows that, at the end of 2022 the ninth year of the programme, JUs achieved the member contribution targets set by their respective founding regulations for Horizon 2020 activities to varying degrees, ranging from 38 % to over 100 % (including IKAA, where relevant). For EuroHPC, IHI, CBE and KDT, according to the JUs, the lower achievement rates are partly explained by the long project duration required by the nature of the JU-specific research area, the large scale of global consortia implementing projects (IHI), and the involvement of Participating States (EuroHPC and KDT).

2.13. JU staff manage an increasing number of ongoing projects for multiple MFF programmes simultaneously. This may weaken the effectiveness of the JUs' internal controls and their management of these funds and delay the implementation of the new programmes.

Table 2.1 – 2014–2020 MFF: Total members' contributions (in € million)

Members' contributions (as per Founding Regulation and legal decisions)				JUs under Horizon 2020	Members' contributions (as at 31.12.2022)						
EU cash (a)	Other members' IKOP and cash (1) (b)	Other members' IKAA (2) (c)	Total (d)= (a)+(b)+(c)		EU cash (e)	Other members' IKOP validated and cash (1) (f)	Other members' IKOP reported not validated (1) (g)	IKAA (h)	Total (i) = (e)+(f)+(g)+(h)	Achievement rate with IKAA (j) = (i) / (d)	Achievement rate without IKAA (k) = ((e)+(f)+(g)) / ((a)+(b))
585.0	790.5	N/A	1 375.5	SESAR	537.3	535.8	84.0	N/A	1 157.1	N/A	84 %
1 755.0	1 228.6	965.3	3 948.9	CS2 - CA	1 682.7	859.8	139.0	1 223.1	3 904.6	99 %	90 %
1 638.0	1 638.0	N/A	3 276.0	IMI2 - IHI	991.7	890.3	224.0	N/A	2 106.0	N/A	64 %
665.0	95.0	285.0	1 045.0	FCH2 - Clean H2	573.1	66.5	47.3	1 039.0	1 725.9	165 %	90 %
1 185.0	2 827.5	N/A	4 012.5	ECSEL - KDT	1 158.6	926.1	1 172.5	N/A	3 257.2	N/A	81 %
835.0	475.3	2 235.5	3 545.8	BBI - CBE (4)	770.3	88.4	67.6	1 797.9	2 724.2	77 %	71 %
398.0	350.0	120.0	868.0	S2R - EU-RAIL	383.8	264.9	67.5	244.0	960.2	111 %	96 %
536.0	908.0	N/A	1 444.0	EuroHPC (3)	377.0	124.8	49.0	N/A	550.8	N/A	38 %
7 597.6	8 312.9	3 605.7	19 515.6	Total	6 474.5	3 756.6	1 850.9	4 304.0	16 386.0	84 %	76 %

(1) Include IKOP and cash contributions from Participating States (KDT, EuroHPC) and international organisations (SESAR).

(2) In-kind contributions to additional activities outside of the JU's work plan.

(3) For EuroHPC, the EU contribution includes €100 million from the CEF programme.

(4) For CBE, EU and private members' cash contribution targets as reduced by €140 million. Private members' in-kind contribution targets as set in the JU's annual work programmes.

Source: ECA based on JUS' data.

Action 1

EuroHPC, IHI, CBE and KDT should establish a time-scheduled action plan for finalising the implementation of projects approved under previous MFFs.

Two JUs will not have achieved their private members' contribution targets by the end of the Horizon 2020 programme implementation period

2.14. For the Horizon 2020 programme, the JUs' founding regulations set the contribution target per member category (EU, private members, Participating States, international organisations) to be provided for the JU-specific research and innovation activities under the programme (see [Table 2.2](#)).

2.15. Regarding CBE, in 2022, the JU cancelled around €8.2 million of signed projects due to the unexpected termination of a Horizon 2020 flagship project and the suspension of several other projects. As all Horizon 2020 calls were closed at the end of 2020, private members' IKOP for CBE is now limited to the current level of their legal commitments. At the end of 2022, this amounted to 54 % of the indicative target set in the JU's annual work programmes. Although the JU may achieve the overall target for its private members' in-kind contributions (IKOP and IKAA), it will not achieve the indicative private members' target for IKOP.

2.16. Regarding EuroHPC, at the end of 2022, the private members had provided €11 million (or 2.6 %) in in-kind contributions for Horizon 2020 projects, a figure considerably below the minimum private members' target of €420 million to be achieved by the end of the

Horizon 2020 programme. We found that the JU's current financing arrangements for Horizon 2020 grant actions only allow private members to provide in-kind contributions for one type of project (innovation projects, capped at 30 % of project costs). Consequently, the JU's financing arrangements could not leverage private members' in-kind contributions at the level of the target set in its founding regulation for the Horizon 2020 programme. Under the 2021-2027 MFF programmes the minimum private members' contribution target increased to €900 million. However, as the JU's financing arrangements for grants have remained the same, there is a high risk that the JU will not achieve the private members' contribution target set in its new founding regulation.

2.17. For CBE and EuroHPC, the significant reduction in private members' in-kind contributions to their operational activities presents a risk to the overall achievement of their parts of the Horizon 2020 research and innovation programme.

Action 2

To ensure the achievement of their private members' contribution targets for the 2021-2027 MFF, CBE and EuroHPC should, based on a strategic programme implementation plan, monitor the private members' individual contribution achievements on an annual basis.

There is insufficient information on members' contributions at programme level

2.18. The amounts of contributions to JUs' research programmes, per member category (EU, private members, Participating States), differ significantly in the JUs' accounts (see [Table 2.1](#)). This is because EU cash contributions are validated and recognised when they are paid to the JU at the beginning of project implementation. However, other members' (private members, Participating States) in-kind and cash contributions are only recognised in the accounts after validation of the costs incurred and declared for the implemented projects. We consider that the gap between the recognised amount of EU cash contributions on the one hand, and other members' in-kind and cash contributions on the other hand, was addressed in a suboptimal way in the JUs' 2022 annual accounts by not providing information on the JU members' legal commitments at the year end (see [Table 2.2](#)).

2.19. [Table 2.2](#) shows JU members' legal commitments, in terms of the value of signed Horizon 2020 grant agreements or contracts. For most JUs, the private members committed in-kind contributions equal to or exceeding the EU contributions at the end of the programme's implementation. However, at CBE and EuroHPC the signed grant agreements neither committed private members to provide in-kind contributions at the level of the EU cash contributions, nor ensured that private members would achieve the minimum

contribution target at the end of the programme's implementation (see also paragraphs 2.15 to 2.17).

Table 2.2 – MFF 2014–2020: Members' contributions committed to operational costs (in € million)

Members' contributions to operational costs (as per Founding Regulation and legal decisions)			JUs under Horizon 2020	Grant agreements and contracts signed (as at 31.12.2022)					
EU maximum cash	Other members' minimum IKOP and cash (1)	Total		EU co- financing committed	%	Other members' IKOP and cash (committed) (1)	%	Total	Programme implementation rate
555.8	747.0	1 302.8	SESAR	555.8	100 %	744.5	100 %	1 300.3	100 %
1 716.0	1 189.6	2 905.6	CS2 - CA	1 716.0	100 %	968.3	81 %	2 684.3	92 %
1 595.4	1 595.4	3 190.8	IMI2 - IHI	1 452.1	91 %	1 499.4	94 %	2 951.5	93 %
646.0	76.0	722.0	FCH2 - Clean H2	646.0	100 %	190.5	251 %	836.5	116 %
1 169.7	2 787.5	3 957.2	ECSEL - KDT	1 169.7	100 %	2 685.2	96 %	3 854.9	97 %
815.8	475.3	1 291.1	BBI - CBE (2)	815.8	100 %	258.4	54 %	1 074.2	83 %
384.5	336.5	721.0	S2R - EU-RAIL	384.5	100 %	320.7	95 %	705.2	98 %
526.0	896.0	1 422.0	EuroHPC (3)	525.6	100 %	458.3	51 %	983.9	69 %
7 409.2	8 103.3	15 512.5	Total	7 265.5	98 %	7 125.3	88 %	14 390.8	93 %

(1) Include IKOP and cash contributions from Participating States (KDT, EuroHPC) and international organisations (SESAR).

(2) IKOP contribution targets as agreed in the JU's annual work plans plus the reduced operational cash contributions.

(3) Participating States finance the part not covered by the EU, private members contribute on top of the maximum eligible costs of grant actions.

Source: ECA based on JUs' data.

Action 3

To increase transparency, all JUs should disclose in their annual accounts, relevant information regarding members' contributions at programme level. For each programme under which they operate, JUs should present per member category up to the year end, all relevant information including the legal contribution targets set for the respective programme, the volume of contributions received, and the volume of legal commitments.

JUs' implementation rate for their 2022 operational budget was significantly lower than in previous years

2.20. The main part of the JUs' expenditure budget consists of grant payments to beneficiaries (operational budget). SESAR, CA, Clean H2, KDT, CBE and EU-Rail saw a decrease in their operational budget implementation rate owing to the rising costs and delivery problems faced by beneficiaries in the wake of the COVID-19 crisis and the war of aggression against Ukraine. At EuroHPC, the low implementation rate (24 %) was mainly due to delays arising from the lengthy acquisition process for supercomputers. Therefore, these JUs prolonged the duration of most ongoing Horizon 2020 activities and postponed final payments to 2023 or later.

2.21. AtF4E, the lower implementation rate for commitments (72 %) resulted from a slowdown in its operational activities and those of the ITER-IO , mainly due to the aftermath of the COVID-19 crisis, the war of aggression against Ukraine, and recent technical design issues concerning the current assembly phase of the ITER project.

SMEs and new beneficiaries are more prone to errors in personnel costs

2.22. As in previous years, our 2022 audits of grant payments at beneficiaries confirmed systemic errors, mainly relating to personnel costs and equipment. The risk of error was increased by the fact that the methodology for calculating personnel costs has become more complex in some respects under Horizon 2020 (such as the calculation method for additional remuneration). For the audited 2022 grant payments, the main sources of errors we found were:

- the incorrect calculation of hourly rates and use of planned cost data for unit cost rates;
- the inclusion of hours worked outside the reporting period or during periods of leave;
- the declaration of additional remuneration beyond the annual threshold of €8 000;
- the incorrect declaration of staff service costs as direct personnel costs; and
- the declaration of ineligible equipment costs.

EuroHPC will not meet its recruitment objective

2.23. The staffing level for EuroHPC under the 2021-2027 MFF was set out in the legal financial statements included in the Commission's proposal for a new founding regulation¹². To implement around €7 billion of funds under the 2021-2027 MFF, EuroHPC received 39 additional staff posts to be recruited by 2023. The JU had recruited eight staff members by the end of 2022 and 20 by mid-2023. Consequently, the JU did not meet its 2022 recruitment target and is still behind in meeting its recruitment objective of 39 new staff members by the end of 2023.

F4E's senior management situation has remained unstable

2.24. F4E's senior management situation was in a significant state of transition at the end of 2022. The departure of the director in June 2022, and the appointment of the head of the

¹² COM(2020) 569 final.

Broader Approach Department as ITER-IO Director-General in September 2022, resulted in personnel changes for four of the JU's seven senior management positions. This situation presents a risk to F4E's sound management and continuity, at a time when experienced senior management staff will be required to implement the new ITER baselines, which have a significant impact on F4E's activities.

F4E's contract management has weaknesses

2.25. F4E has concluded complex multiannual contracts to meet its delivery obligations for the ITER project. Therefore, strong contract management is of the utmost importance for the JU. In 2013, F4E signed a contract amounting to €500 million for the design, equipment, and installation of the ITER nuclear and non-nuclear buildings. In December 2020, F4E and ITER-IO, reacting to concerns and dissatisfaction with the contractor's progress and efficiency related to the work still outstanding on the non-nuclear buildings, assessed with the help of external legal experts, the potential consequences of alternative procurement strategies such as the retendering of equipment services or transfer of the remaining work to other contractors. In February 2021, the contractor submitted a cost claim totalling €150 million for nuclear design and equipment services, followed in September 2021 by another cost claim of €30 million for the remaining work on the non-nuclear buildings. Based on legal experts' risk analysis and feedback, the JU's director settled with the contractor only the first cost claim for an amount of €75 million, and the contractor opened a dispute for the unsettled second cost claim.

2.26. Our analysis of the documentation on the contract's implementation revealed weaknesses in the JU's management of this contract. In particular, the JU's inability to notify material non-compliance in the contractor's programming led to different interpretations and disagreement between the parties about the scope of the work, timelines and project requirements. Moreover, the legal experts concluded that, because of the way the relevant clauses were worded, the JU could not terminate the contract with a view to executing the de-scoped work itself or arranging for it to be executed by other contractors. The absence of project records by F4E did not allow the JU to clearly establish the contractor's liabilities. These weaknesses have seriously affected the achievement of the contract's objectives and – if not addressed - may also affect other operational activities of F4E, considering the significant amendments to ongoing complex contracts that may be required, resulting from the updated baseline of the ITER project.

Joint Undertakings have followed-up on our previous years' observations in most respects

2.27. In most cases, the JUs have taken corrective action in response to the observations in our specific annual reports from previous years, details of which can be found in the annexes to Chapter 3.

2.28. *Box 2.1* explains the different types of follow-up status referred to in this report, with examples of typical situations to which they apply.

Box 2.1

Explanations of the follow-up status terms used in this report

Closed: There is evidence that the JU or another entity has taken corrective action to address the observation, or the observation is no longer applicable. For example, the contract that gave rise to the observation has expired or, due to a change of circumstances, the cost of addressing the issue would outweigh the benefits.

Open: No corrective action has been taken to address the observation, or there is some evidence of corrective action having been taken, but the process is not yet complete.

2.29. *Figure 2.2* shows that, out of 28 observations not sufficiently addressed at the end of 2021, 13 observations (46 %) were closed in 2022 because the JUs took corrective actions. Fifteen observations (54 %) remained open at the end of 2022.

Figure 2.2 – JUs' efforts to follow up on previous years' observations



Note: For SESAR, IHI, and Clean H2, all previous years' observations were closed because of the JUs' corrective actions taken during 2022.

Source: ECA.

Joint Undertakings' risk-based control framework for implementing grants is not yet sufficiently developed

Methodology of our horizontal review

2.30. In 2022, we analysed the risk-based control framework of the grant management process for the JUs operating under the Horizon 2020 and Horizon Europe programme. Our analysis covered the implementation of the Commission's ex-ante and ex-post control strategies for Horizon 2020 and for Horizon Europe. We used our results to draw conclusions as to the current weaknesses and related risks the JUs should consider when adapting the internal control process for grant projects under the Horizon Europe programme.

2.31. We based our analysis on data reports from the Commission's e-grant system (COMPASS), JU-specific reports of the Commission's Internal Audit Service (IAS) on the grant implementation process under Horizon 2020 (including the follow-up of relevant IAS recommendations), and the JUs' internal guidance documents for project officers and financial officers. This was complemented by interviews with staff involved in operational and financial project monitoring and internal control at the JUs, as well as an analysis of additional documents provided by the JUs.

Half of the JUs lacked a structured risk-based approach to ex-ante controls for Horizon 2020 grants

2.32. According to Article 21 of the JUs' financial rules, the purpose of ex-ante controls is to prevent errors and irregularities before the authorisation of operations and to mitigate risks of non-achievement of objectives. Each operation shall be subject at least to an ex-ante control relating to the operational and financial aspects of the operation, on the basis of a multiannual control strategy which takes risk into account. The extent, in terms of frequency and intensity, of the ex-ante controls shall be determined by the authorising officer responsible taking into account the results of prior controls, as well as risk-based and cost-effectiveness considerations based on the authorising officer's own risk analysis. In case of doubt, the authorising officer responsible for validating the relevant operations shall, as part of the ex-ante controls, request complementary information or perform on-the-spot checks to obtain reasonable assurance.

2.33. In 2018, the Common Implementation Centre (CIC) of the Directorate-General for Research and Innovation (DG RTD) established [guidance on Horizon 2020 ex-ante controls](#). The

main principles are that (i) controls must provide reasonable assurance about legality and regularity, based on the information available at the time; (ii) controls must strike the right balance between reducing the administrative burden and exercising effective financial control; (iii) controls must be risk-based and cost efficient; and (iv) beneficiaries should be treated equally.

2.34. Under this guidance, the JUs should use “a combination of a pre-defined set of simple and straightforward standard controls, with additional checks that are triggered only exceptionally and based on a risk analysis”. Standard controls should be complemented by risk-based controls, which may justify asking the beneficiaries for further information and evidence on specific issues. Risk factors can relate to, inter alia, the risk inherent to the type or scope of the research project; experience of the project coordinator; the amount of EU contribution; project duration; number of the consortium’s project partners; use of third parties; coordinator’s cooperation during the grant agreement preparation phase; beneficiaries’ financial viability; Early Detection and Exclusion System cases; results from ex-post controls; presumed fraud and OLAF cases; newcomer or SME status, and; payment of balance.

2.35. The risk-based controls are supported by the risk management module of COMPASS that provides an overview of some risk factors related to the project and its beneficiaries such as the Early Detection and Exclusion System, ex-post audit results, number of participations in Horizon 2020, and the SME status. Additional project related risk factors can be retrieved directly from COMPASS (for example, project duration, EU contribution, and number of project partners in the consortium).

2.36. The CIC has also developed a guidance note entitled “[Baseline requirements and principles of the common project monitoring strategy](#)”. This note establishes key principles for ensuring that implementing bodies (such as JUs) adapt the level of their project monitoring based on a sound project risk assessment methodology. In particular, the note underlines that a number of common factors, such as the amount of the EU contribution and the number of participants or project duration, determine the complexity of a project and the likelihood it may encounter problems. In addition, the assessment of the level of monitoring should also depend on the outcome of a project-specific risk assessment, to be carried out at the grant agreement preparation stage or at any moment during project implementation.

2.37. At the end of 2022, only four of the eight JUs (CA, Clean H2, IHI and CBE) had developed and implemented a complete risk-based approach to ex-ante controls in line with the CIC guidance, considering the JU-specific risk circumstances. To this end, each of these JUs identified the most relevant risk criteria and designed, based on them, a risk-based monitoring approach. Such an approach allowed them to assess the risk level of each project and beneficiary during the main phases of project implementation, such as grant agreement preparation, grant agreement amendment, reporting, and payment. In this respect, these JUs

also drew up internal guidelines on their risk-based approach and trained and guided their staff on applying it properly and consistently.

2.38. For SESAR, based on the review of internal documentation, and interviews with JU staff, we found that at the end of 2022, the JU's risk monitoring approach only considered beneficiaries that had been ex-post audited, mainly top beneficiaries. Potentially risky beneficiaries that had never been ex-post audited and newcomers were therefore excluded from the risk assessment. Moreover, the JU did not assess risk at project level.

Action 4

SESAR should enhance its risk monitoring approach to ex-ante controls to identify potentially risky beneficiaries currently not included in the population (such as beneficiaries that had never been ex-post audited and newcomers) and risky projects.

2.39. While KDT implemented a risk-based monitoring of projects in line with the Commission's baseline, as well as a risk assessment of SMEs and newcomers, it has not yet developed internal guidelines to consolidate the processes. For KDT, the risk of errors in grant payments was mitigated by the fact that the Participating States performed detailed ex-ante controls on the eligibility of project costs reported for national co-financing, for the beneficiaries operating in their national territory. Participating States closely cooperated with KDT and notified it of detected major errors, irregularities, and registered bankruptcies on a timely basis. Contrary to other JUs, the 90 % threshold for pre-financing was applied at the beneficiary level, and any changes to the cost budget among consortia members required an amendment to the grant agreement. KDT controlled the fulfilment of these specific criteria outside of COMPASS, and project officers made standardised manual checks in Excel spreadsheets.

2.40. While EU-Rail and EuroHPC performed on an ad-hoc basis risk-based ex-ante controls on risky projects, they had not yet implemented a structured risk-based approach to ex-ante controls by the end of 2022. In particular, these JUs had not aligned ex-ante controls to the high-risk factors identified by targeted risk assessments. Finally, they had not developed internal practical guidance on how to implement a risk-based monitoring, including instructions on how staff should use the risk management module available in COMPASS.

2.41. Consequently, these two JUs did not ensure a complete and harmonised assessment of their relevant project and beneficiary-related risks, which may result in inefficient and/or ineffective ex-ante controls increasing the risk of co-financing ineligible costs, non-achievement of project objectives, project delays or even project failures.

Action 5

EU-Rail and EuroHPC should implement a structured risk-based approach to ex-ante controls covering relevant project and beneficiary-related risks.

Moreover, EU-Rail, EuroHPC and KDT should develop internal, practical guidance on how to implement a risk-based monitoring at the level of projects and beneficiaries, and how staff should use the risk management module available in COMPASS.

Most JUs showed weaknesses in the use of the reinforced monitoring tool

2.42. According to the section 3.2.2 on reinforced monitoring in the CIC [guidance on Horizon 2020 ex-ante controls](#), the reinforced monitoring tool supports officers dealing with grants (project officers, financial officers, and legal officers) to perform a risk assessment of projects or beneficiaries. It allows them at any moment during the project implementation, to record identified important risks and trace the respective monitoring and risk mitigating action. Consequently, it is designed to help in targeting ex-ante controls on the most important risks assessed for a project or beneficiaries.

2.43. The tool is embedded in the risk management module of the e-grant system (COMPASS). For the structured and consistent use, the tool offers a pre-defined typology of monitoring categories, such as substantial implementation risk; operational capacity issues; serious ethics risk; suspected irregularity/fraud; established serious audit findings; and risks identified during ex-ante control. The officers must clearly reference which control actions they intend to perform due to the identified risk, such as request for targeted supporting documents; launch a targeted technical review of some of the project work with the involvement of experts; and in case of critical problems, launch a technical review and financial audit of the entire project.

2.44. For an effective and efficient use of the tool, officers should define a relevant and achievable deadline (due date) for the targeted completion of the reinforced monitoring action. Upon expiry of the defined due date, and in the event that the risk still persists, and it requires further monitoring, the officer must renew the reinforced monitoring flag, set a new deadline, and up-date the planned course of monitoring action as appropriate.

2.45. Our detailed analysis of a sample of the JUs' reinforced monitoring cases revealed several weaknesses, which prevented their effective and efficient monitoring:

- Specific control actions related to the identified risks were not defined, or the due date for their implementation was not set (EuroHPC, KDT, EU-Rail).

- Upon expiry of the defined due date, the reinforced monitoring flag was neither renewed nor closed. Additionally, the risk level was not reassessed by the officer after the implementation of the control actions (SESAR, CA, and KDT).

Action 6

SESAR, CA, KDT, EU-Rail and EuroHPC should ensure that all reinforced monitoring actions are accompanied by specific control actions targeting the identified risks, and that they are followed-up at a pre-defined deadline.

Most JUs have not yet developed a risk-based ex-post audit approach for Horizon 2020 grant payments

2.46. Section 4.2.1 on risk-based selection of the [Commission’s “Horizon 2020 Ex-post Audit Strategy”](#) notes that the purpose of the risk-based selection for ex-post audit is to target the portions of the budget in the implementing entities where corrections to the errors detected can be most effective (highest contribution beneficiaries, highest contribution participations, high-risk beneficiaries). However, the risk-based selection should also maximise the cleaning effect (see [Box 2.2](#)) by correcting systematic errors from top beneficiaries. Targeting areas with specific risks implies targeting areas for which error rates may go beyond the representative error rate¹³.

2.47. Our interviews with JU staff, the results of previous ex-post audits and our experience with direct substantive testing of grant payments confirmed that the following specific risk criteria may indicate which beneficiaries and projects are at increased risk of error and, consequently, with a potentially high cleaning effect (see [Box 2.2](#)):

- Top beneficiaries by accumulated grant amounts;
- Beneficiaries with newcomer or SME status;
- Beneficiaries with high error rates in previous audits that had not been followed-up;
- Beneficiaries with high dependency on EU-funds;
- Beneficiaries from non-EU member states, having little or no experience with the EU procedures for cost declarations related to EU grants;
- Low level of monitoring defined by the JU for a rather complex project;

¹³ Section 4.2.1 Risk-based selection.

- Projects and beneficiaries with high level of sub-contracting and/or outsourcing to third parties; and
- Beneficiaries with large amounts of EU contributions without certification from independent auditors.

Box 2.2

Cleaning effect

The [Commission's "Horizon 2020 Ex-post Audit Strategy"](#) requires the calculation of a "residual error rate" that reflects the potential effect of the audited beneficiaries' correction of:

- all errors detected in ex-post audited grant payments, plus
- systematic errors effecting the non-audited payments ("extension").

on the error rate detected in the JU-specific representative sample of the DG RTD's Common Audit Service (CAS) ex-post audits. The residual error rate therefore shows how much error is left in the auditable population after the beneficiaries' corrections related to the outcome of the ex-post audits.

Top beneficiaries provide the highest cleaning effect. Although for Horizon 2020 expenditure, the error rate in that part of the beneficiary population is not particularly high, top beneficiaries represent more than 50 % of the Horizon 2020 expenditure. SMEs and newcomers remain a significant source of high errors. However, as the individual amounts claimed by such beneficiaries are relatively low, the cleaning effect of corrections in this beneficiary group is limited.

2.48. To provide sufficient assurance for JUs' discharge procedures, the [Commission's "Horizon 2020 Ex-post Audit Strategy"](#) requires CAS to generate a separate representative (random) sample for each JU (second layer sample). These samples are drawn in addition to the common (random) sample (or first layer sample) for Horizon 2020 expenditure as a whole. Moreover, if the audits under the first two layers are not sufficient for the JUs, Article 10 of their respective delegation agreements provides that the CAS perform additional risk-based ex-post audits at the request and expense of the JU (third layer sample).

2.49. With the exception of CBE, Clean H2 and IHI, all the JUs relied exclusively on the representative (random) samples. Consequently, they did not establish a risk-based approach to ex-post audit and rather complemented their representative ex-post audits with ad hoc requests for risk-based ex-post audits or performed their own ex-post audits in a selected specific area of risk (in 2022, for example, CA selected major cost declarations potentially affected by the COVID-19 crisis).

2.50. CBE, Clean H2 and IHI developed a risk-based approach to ex-post audit to reduce its error rate by strengthening the cleaning effect of their ex-post audits.

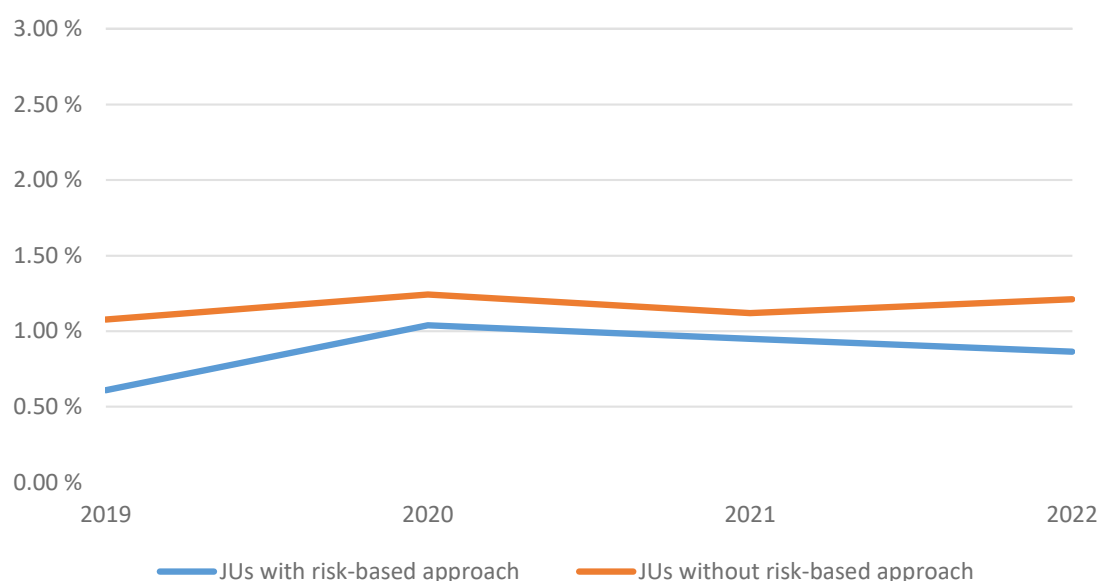
2.51. To increase the cleaning effect, they considered, among others, the following factors for the identification of risky beneficiaries and projects:

- Beneficiary risk profiles confirmed in the past (such as top beneficiaries never previously audited, newcomers, SMEs, beneficiaries with previous audit findings, beneficiaries of non-EU member states); and
- Feedback from operational units (such as information on projects with a risky grant budget but low levels of monitoring, beneficiaries with a high dependence on EU-funds, beneficiaries or projects with a reinforced monitoring flag, beneficiaries with a large amount in non-certified EU-contribution, etc.).

2.52. The CAS overview report on errors resulting from risk-based ex-post audits performed for Horizon 2020 grant payments indicated, that only for Clean H2 and IHI was the sample, on average, better targeted compared to those JUs that requested risk-based ex-post audits on an ad-hoc basis. This is explained by the fact that both JUs used well-developed surveys to detect the most error-prone beneficiaries.

2.53. *Figure 2.3* shows the evolution of the JUs' residual ex-post error rates from 2019 to 2022. It shows that JUs with a well-developed risk-based ex-post audit approach (Clean H2 and IHI) reported a residual error rate below the average of the JUs without such an approach due to the systematic identification and audit of the riskiest beneficiaries.

Figure 2.3 – Evolution of average residual ex-post error rates from 2019-2022



Source: ECA based on data in JUs' annual activity reports 2019-2022.

The importance for JUs to implement their specific risk-based approach to grant management has increased under Horizon Europe

2.54. Under the Horizon Europe programme, there are several important changes to the internal control framework. For example, the Commission in its [orientation note on the Horizon Europe Control Strategy](#) informs that the CAS will only perform the ex-post audit of a representative sample of expenditure across the programme and cease performing specific representative ex-post audit for individual Horizon Europe stakeholders such as JUs. JUs will only be allowed to request risk-based ex-post audits for their beneficiaries and projects if such beneficiaries and projects are clearly identified as high risk.

2.55. Furthermore, the beneficiary and/or project structure of some JUs (SESAR, CA, IHI, EuroHPC) is changing significantly under the Horizon Europe programme, such as the increased number of SMEs, newcomers and larger consortia, as well as the requirement to only use open call procedures for Horizon Europe activities. As a result, the risk factors identified in previous programmes may no longer be relevant and new risk factors may emerge.

2.56. These changes highlight the importance for JUs to implement or adapt their specific risk-based approach to grant management. In 2022, only Clean H2 has developed such an approach (see [Box 2.3](#)).

Box 2.3

Clean H2's risk-based approach to grant management

Clean H2 developed a tailored risk-based approach to strengthen the assurance it obtains from ex-ante controls and ex-post audits:

At the beginning of 2022, the JU analysed the entire population of its Horizon 2020 beneficiaries and flagged those presenting the highest risk for risk-based ex-post audits. The riskiest beneficiaries were all top beneficiaries with JU contribution amount above €1 million over all Horizon 2020 projects operated by the JU, which had never been ex-post audited and had a risk profile of SME or newcomer status.

The remaining top beneficiaries were invited to complete a brief self-assessment questionnaire that focused on the most common errors detected by previous ex-post audits, such as the complexity of the personnel cost option chosen, significant sub-contracting, purchases of assets, internal supplies, method of cost reporting, and the implementation of previous ex-post audit results.

Based on their replies, the JU identified those top beneficiaries with a high ex-ante control risk. It held financial webinars with them, focusing on the key characteristics of a correct cost declaration with significant cost items.

The outcome of the webinars was used by the JU's project and financial officers to improve the effectiveness of its ex-ante controls on the upcoming cost declarations by these top beneficiaries (payment phase).

2.57. The effectiveness of a risk-based approach to grant management may be affected by existing technical constraints. The e-grant system (COMPASS) does not yet support the delivery of valuable automatic feedback from ex-post audit findings (along with suggestions for targeted ex-ante controls) back to ex-ante controllers for their risk assessment.

Action 7

Under Horizon Europe, all JUs should implement a risk-based approach to grant management that covers the main grant management phases from grant agreement preparation to payment. In this context, JUs should in particular ensure that:

- (a) potentially risky beneficiaries and projects are subject to intensified ex-ante controls or ex-post audits; and
- (b) important ex-post audit results are duly considered in the risk assessment for future ex-ante controls.

Other Joint Undertaking related products issued by the ECA

2.58. Apart from the annual audit report related to the JUs' annual accounts, in the course of 2022 and 2023, we also issued various special audit reports and reviews which are referring to the JUs (see [Figure 2.4](#)).

Figure 2.4 – Other JU- or research-related products recently issued by the ECA

ECA special report 05/2022:

Cybersecurity of EU institutions, bodies and agencies: Level of preparedness overall not commensurate with the threats

Significant cybersecurity incidents in EU bodies increased more than tenfold between 2018 and 2021 as remote working has considerably increased the number of potential access points for attackers.

Significant incidents are generally caused by the use of new methods and technologies, and can take weeks if not months to investigate and recover from. One example was the cyberattack on the European Medicines Agency, where sensitive data was leaked and manipulated to undermine trust in vaccines.

The main conclusion of the auditors was that the level of cybersecurity preparedness within EU bodies varies and is overall not commensurate with the growing threats. In fact, they do not approach cybersecurity consistently, and essential controls and key cybersecurity good practices are not always in place.

Although differences in cybersecurity levels could theoretically be justified by the different risk profiles and the varying sensitivity levels of the data they handle, the auditors stress that – since EU bodies are strongly interconnected – cybersecurity weaknesses in a single EU body can expose several other organisations to cybersecurity threats.

Finally, there is currently no legal framework for information security and cybersecurity in EU institutions, agencies and bodies.

ECA special report 23/2022:

Synergies between Horizon 2020 and European Structural and Investment Funds

In the Europe 2020 Strategy, the Commission highlighted the role of research and innovation as a key driver of social and economic prosperity and environmental sustainability.

The two main funds supporting research and innovation were Horizon 2020, with a budget allocation of €76.4 billion, and the European Structural and Investments Funds (ESIFs), with close to €41 billion committed to research and innovation activities.

This report assessed whether the Commission and the relevant national/regional implementing authorities took appropriate measures to establish synergies between Horizon 2020 and the ESIFs.

It was found that some factors although crucial in creating synergies were not yet fully in place and the implementation varied depending on the type of synergy. Cooperation between the two programmes' research and innovation stakeholders was still limited. The absence of an integrated database for ESIF projects that is interoperable with the Horizon 2020 database made it difficult for the Commission and national/regional authorities to identify and explore possible synergies. Moreover, ESIF managing authorities did not implement all synergy-promoting measures of the strategic documents. Certain project proposals that were positively evaluated under Horizon 2020 but not funded due to a lack of resources, received a quality label (Seal of Excellence) to make it easier for them to receive ESIF funding. However, of the sampled Horizon 2020 activities only a limited number of labelled activities ultimately received funding from the ESIFs.

The auditors recommend the Commission to;

- improve cooperation between stakeholders active in research and innovation;
- exploit the potential of databases to foster synergies;
- increase the use of downstream synergies; and
- improve information flows about Horizon 2020 projects awarded the Seal of Excellence.

ECA special report 05/2023:

A patchwork construction requiring further simplification and accountability

This audit aimed at providing insight into the EU's financial landscape which has been described as a "galaxy of funds and instruments around the EU budget". JUs are listed as an instrument that is fully integrated into the EU budget.

The aim of the report was to identify potential scope for simplifying and streamlining the EU's financial landscape. It also assessed the reasons for creating instruments outside the EU budget and whether existing arrangements ensure public scrutiny of funding.

The report found that the EU's financial landscape is composed of too many instruments with a variety of governance arrangements and sources of funds, and different coverage of potential liabilities.

For some of those instruments the audit of their performance and European Parliament oversight is missing.

The audit notes the recent progress made on consolidating several instruments. However, the potential for simplification has not yet been fully exploited, in particular for those instruments providing financial assistance.

The auditors recommend the Commission to:

- assess any proposals for new instruments and to inform the Council;
- publish the information on the EU's overall financial landscape;
- integrate the Modernisation Fund into the EU budget; and
- consolidate existing financial assistance instruments.

Source: The details on the reports, related recommendations and the auditee's reply can be consulted on the ECA website eca.europa.eu.

Joint Undertakings' reply to chapter 2

2.38 It is important to note that the main part of the SESAR 3 JU's Horizon 2020 budget was consumed by the top beneficiaries (the JU's private members) that mainly implemented large projects of the Industrial Research Calls, all of which were ex-post audited (sometimes multiple times) throughout the previous programmes. The SESAR JU considered therefore the remaining risk related to the smaller beneficiaries and newcomers (which were not ex-post audited) as rather low.

Finally, as the number of Horizon 2020 projects was quite limited and mostly implemented by known and ex-post audited beneficiaries, the JU assessed the overall risks related to the Horizon 2020 programme rather at the level of its top beneficiaries than at project level.

2.40 The EU-Rail JU would like to underline that the risk of errors in Horizon 2020 grant payments was highly mitigated by the use of lump-sums. In particular, the EU-Rail JU ensured reasonable lump sums by using financial experts during the call evaluation procedures and carefully investigated and negotiated all cost items questioned by the financial experts during the grant agreement preparation phase, in accordance with Commission Decision C(2017) 7151 of 27 October 2017 on authorising the use of reimbursement on the basis of a lump sum for the eligible costs of actions under the Horizon 2020 Framework Programme.

While the EU-Rail JU has embedded procedures for the ex-ante identification of high-risk factors for Horizon 2020 grant agreements, it recognises that these procedures could be better aligned with the Commission guidance on risk-based ex-ante controls.

2.55 Under the Horizon Europe programme, the SESAR 3 JU with an increased number of private members, organises open calls for proposals. In 2023, when the first calls of the Horizon Europe programme were concluded, the SESAR 3 JU adopted a new risk-based approach to ex-ante controls and put in place new risk-based tools, which assess risks at project level and for newcomers. The SESAR 3 JU will provide information on these activities in its 2023 annual activity report.

Action 7 The JUs are aware of the significant change to the Commission's internal control framework for Horizon Europe grants, according to which the JUs can no longer establish their own specific representative samples and calculate their specific representative and residual error rates. Consequently, all JUs are already preparing for this change by defining their common implementation approach to the Commission's Horizon Europe Control Strategy (currently under preparation), which will include the following elements:

- Risk-based ex-ante controls;
- Risk-based ex-post audits; and
- AAR reporting on the most significant ex-post audit results (without stating JU-specific error rates), detected internal control weaknesses, and the cleaning effect.

The JUs' common implementation approach (currently under preparation), [which will address](#) the ECA's observation and Action 7, will be based on new assurance building blocks that are relevant under Horizon Europe.



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Chapter 3

Statements of Assurance of the EU Joint Undertakings

3.1. Information in support of the statements of assurance

Basis for opinions

3.1.1. We conducted our audit in accordance with the International Federation of Accountants (IFAC) International Standards on Auditing (ISAs) and Codes of Ethics and the INTOSAI International Standards of Supreme Audit Institutions (ISSAIs). Our responsibilities under those standards are further described in the ‘Auditor’s responsibilities’ section of this report. We have met independence requirements and fulfilled our ethical obligations under the International Ethics Standards Board for Accountants Code of Ethics for Professional Accountants. We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our opinion.

Responsibilities of management and those charged with governance

3.1.2. In accordance with Articles 310 to 325 of the TFEU and the JUs’ Financial Regulations, the management of each JU is responsible for the preparation and presentation of their accounts based on internationally accepted accounting standards for the public sector and for the legality and regularity of the underlying transactions. This responsibility includes the design, implementation, and maintenance of internal controls relevant to the preparation and presentation of financial statements that are free from material misstatement, whether due to fraud or error. The management is also responsible for ensuring that the activities, financial transactions, and information reflected in the financial statements comply with the regulatory framework of the authorities governing them. The management of each JU bears ultimate responsibility for the legality and regularity of the transactions underlying each JU’s accounts.

3.1.3. In preparing the accounts, management is responsible for assessing the JU’s ability to continue as a going concern, disclosing, as applicable, matters related to going concern and using the going concern basis of accounting, unless management intends either to liquidate the entity or to cease operations, or has no realistic alternative but to do so.

3.1.4. Those charged with governance are responsible for overseeing the JU’s financial reporting process.

The auditor's responsibilities for the audit of the accounts and underlying transactions

3.1.5. Our objectives are to obtain reasonable assurance that the accounts of the JUs are free from material misstatement and that the underlying transactions are legal and regular, and to provide, on the basis of our audit, the European Parliament and the Council with statements of assurance on the reliability of the accounts and the legality and regularity of the underlying transactions. Reasonable assurance is a high level of assurance, but it does not guarantee that an audit will always detect a material misstatement or non-compliance. These can arise from fraud or error and are considered material if, individually or taken together, they could reasonably be expected to influence the economic decisions of users based on these accounts.

3.1.6. For revenue, we verify the contributions received from the Commission, other partners or participating countries and assess the JUs' procedures for collecting other income, if any.

3.1.7. For expenditure, we examine payment transactions once the expenditure has been incurred, recorded, and accepted. This examination covers all categories of payments at the point they are made, except advances. We examine advance payments when the recipient of funds provides justification for their proper use, and when a JU accepts the justification by clearing the advance payment, in the same year or later.

3.1.8. In accordance with ISAs and ISSAIs, we exercise professional judgement and maintain professional scepticism throughout the audit. We also take the following steps:

- We identify and assess the risks of material misstatement of the accounts and of material non-compliance of the underlying transactions with the requirements of the legal framework of the European Union, whether these are due to fraud or error. We design and perform audit procedures responsive to those risks. We obtain audit evidence that is sufficient and appropriate to provide a basis for our opinions. The risk of not detecting a material misstatement or non-compliance resulting from fraud is higher than for error detection, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the overriding of internal controls.
- We obtain an understanding of internal controls relevant to the audit, in order to design audit procedures that are appropriate in the circumstances, but not for expressing an opinion on the effectiveness of those internal controls.
- We evaluate the appropriateness of the accounting policies used and the reasonableness of accounting estimates and related disclosures made by management.
- We draw conclusions on the appropriateness of management's use of the going concern basis of accounting and, based on the audit evidence obtained, on whether a material

uncertainty exists related to events or conditions that may cast significant doubt on a JU's ability to continue as a going concern. If we conclude that a material uncertainty exists, we are required to draw attention in our auditor's report to the related disclosures in the accounts or, if these disclosures are inadequate, to modify our opinion. Our conclusions are based on the audit evidence obtained up to the date of our auditor's report. However, future events or conditions may cause an entity to cease to continue as a going concern.

- We evaluate the overall presentation, structure, and content of the accounts, including the disclosures, and whether the accounts fairly represent the underlying transactions and events.
- We obtain sufficient appropriate audit evidence regarding the financial information of the JUs to express an opinion on the accounts and transactions underlying them. We are responsible for the direction, supervision, and performance of the audit. We remain solely responsible for our audit opinions.
- We consider the audit work of the independent external auditor performed on the JUs' accounts as stipulated in Article 70(6) of the EU Financial Regulation¹⁴.

3.1.9. For the JUs' research expenditure under the Horizon 2020 programme, the Common Audit Service of the Commission's DG RTD (CAS) performs the ex-post audits. Regarding the CAS ex-post audit results, the Commission considered in its proposal for a Horizon 2020 regulation¹⁵ that a risk of error, on an annual basis, within a range between 2 % and 5 % is a realistic objective, considering the costs of controls and the complexity of rules for the reimbursement of costs of research project. The Commission's aim for the residual level of error is to achieve a level as close as possible to 2 % at the closure of the Horizon 2020 programme. For the JU's research expenditure under the Horizon Europe programme, the CAS remains responsible for the ex-post audits.

3.1.10. We communicate with the management on matters, such as the planned scope and timing of the audit and significant audit findings, including any significant weaknesses in internal controls that we identify during our audit.

3.1.11. From the matters on which we communicated with the JUs, we determine those matters that were of most significance in the audit of the accounts of the current period and are therefore the key audit matters. We describe these matters in our auditor's report unless law or regulation precludes public disclosure about the matter or when, in extremely rare circumstances, we determine that a matter should not be communicated in our report

¹⁴ Regulation (EU, Euratom) 2018/1046.

¹⁵ COM(2011) 809.

because the adverse consequences of doing so would reasonably be expected to outweigh the public interest benefits of such a communication.



Joint Undertakings implementing EU Framework Programmes

3.2. The Single European Sky Air Traffic Management Research 3 (SESAR 3) Joint Undertaking

Introduction

3.2.1. The [Single European Sky Air Traffic Management Research 3 \(SESAR 3\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031¹⁶. The SESAR 3 JU replaced and succeeded the SESAR JU that was set up in February 2007 under the Seventh Research Framework Programme (FP7) for a period of eight years¹⁷ (SESAR 1) and extended in June 2014 to continue to operate under the Horizon 2020 programme for a period until 31 December 2024¹⁸.

3.2.2. SESAR 3 JU is a public-private partnership for the development of modernised air traffic management in Europe and to accelerate through research and innovation the delivery of the Digital European Sky. Its founding members are the EU, represented by the Commission, the European Organisation for the Safety of Air Navigation ([Eurocontrol](#)), and more than 50 organisations covering the entire aviation value chain, from airports, airspace users of all categories, air navigation service providers, drone operators and service providers, the manufacturing industry and scientific community.

¹⁶ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

¹⁷ [Council Regulation \(EC\) No 219/2007](#) on the establishment of a Joint Undertaking to develop the new generation European air traffic management system (SESAR).

¹⁸ [Council Regulation \(EU\) No 721/2014](#) amending Regulation (EC) No 219/2007.

The Single European Sky Air Traffic Management Research 3 (SESAR 3) Joint Undertaking

3.2.3. *Table 3.2.1* presents key figures for the JU.

Table 3.2.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	146.9	69.9	110 %
Available commitment budget (million euros) ⁽¹⁾	158.8	34.8	356 %
Total staff as at 31 December ⁽²⁾	36	37	-3 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.2.4. The changes in the size of the JU's budget as shown in *Table 3.2.1*, largely depend on the implementation phase of the multiannual research and innovation programmes. In 2022, the JU started with the implementation of the Horizon Europe programme. Therefore, the 2022 budget includes the commitment budget for the first Horizon Europe calls planned for 2022, and the payment budget for the related pre-financing payments.

Information in support of the statement of assurance

3.2.5. Our audit approach, the basis for our opinion, the responsibilities of the SESAR 3 JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page 141 forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.2.6. We have audited:

- (a) the accounts of the SESAR 3 JU, which comprise the financial statements¹⁹ and the reports on the implementation of the budget²⁰ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.2.7. In our opinion, the accounts of the SESAR 3 JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the SESAR 3 JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

¹⁹ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

²⁰ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.2.8. In our opinion, the revenue underlying the accounts of the SESAR 3 JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.2.9. In our opinion, the payments underlying the accounts of the SESAR 3 JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.2.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.2.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU, private members, and Eurocontrol) differ significantly from each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, is addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end, in terms of signed grant agreements and contracts.

3.2.12. In the following paragraphs, we provide an overview table on the members' contribution achievements per programme in 2022.

Implementation of the Horizon 2020 programme

3.2.13. *Table 3.2.2* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.2.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and bilateral agreements)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG Move)	555.8	29.3	N/A	585.0	537.3	N/A	N/A	N/A	537.3
Eurocontrol	467.0	25.0	N/A	492.0	16.8	274.1	39.5	N/A	330.4
Private members	280.0	18.5	N/A	298.5	10.8	234.1	44.5	N/A	289.4
Total	1 302.8	72.8	N/A	1 375.5	564.9	508.2	84.0	N/A	1 157.1

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

Members' legal commitments are at the level of their contribution targets

3.2.14. To provide a complete picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations, in terms of signed grant agreements and contracts. At the end of 2022, the JU had fully committed the maximum EU operational contribution of €555.8 million for signed grant agreements and contracts under the Horizon 2020 programme. Of this committed amount, around €65.7 million (or 11.8 %) remains to be paid in the coming years for projects and contracts yet to be completed. At the same time, the private members had legally committed to provide their entire in-kind contributions of €280 million, defined as target in the industry membership agreement. Of this amount, industry members reported €278.5 million (or 99.5 %) at the end of 2022. Eurocontrol had fully committed the target of €467 million of operational contributions, defined in the bilateral agreement. Of this amount, it reported €313.6 million (or 67 % of the target) at the end of 2022.

Implementation of the 2022 budget payments for Horizon 2020 activities worsened as beneficiaries faced rising costs and delivery problems

3.2.15. For Horizon 2020 activities, the JU received no new operational commitment appropriations, as the JU had finished its last call for proposals by the end of 2020. The implementation rate for the operational payment appropriations fell to 54 % (2021: 93 %). According to the JU's 2022 report on budgetary and financial management, this was due to the rising costs and delivery problems faced by beneficiaries arising from the COVID-19 crisis. Therefore, the duration of most Horizon 2020 projects had to be prolonged and final payments postponed to 2023.

Implementation of the Horizon Europe programme

3.2.16. *Table 3.2.3* presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.2.3 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽¹⁾ validated	In-kind reported not validated	Total
EU (DG MOVE)	570.0	30.0	600.0	83.5	N/A	N/A	83.5
Private members	475.0	25.0	500.0	0.0	0.0	0.0	0.0
Eurocontrol	475.0	25.0	500.0	1.5	0.0	0.0	1.5
Total	1 520.0	80.0	1 600.0	85.0	0.0	0.0	85.0

(1) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).

Source: ECA based on data from the JU and its founding regulation.

3.2.17. The Horizon Europe commitment appropriations for 2022 were fully implemented for the first two grant calls launched in April 2022. The Commission made a cash contribution of €83.5 million for the implementation of these projects in 2022. However, as the evaluation phase was not finalised by the end of the year, the cash contributions can only be used in the first half of 2023, when the grant agreements are signed, and the related pre-financing payments can be made.

Observations on management and control systems

3.2.18. For Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD performed the ex-post audits. For Horizon 2020 expenditure (clearings and final payments), the JU reported a representative error rate of 2.4 % and a residual error rate of 1.8 %²¹. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.2.19. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries²². We did not find serious quantifiable errors at the JU beneficiaries sampled. For one case, we reported

²¹ SESAR JU 2022 Consolidated Annual Activity Report, chapter 4.1.1.2.3.

²² For grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

The Single European Sky Air Traffic Management Research 3 (SESAR 3) Joint Undertaking

a systemic issue resulting from ineligible costs declared by the beneficiary for non-mandatory certificates of financial statement, related to interim financial statements.

Follow-up of previous years' observations

3.2.20. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, SESAR 3 (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations²³ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For SESAR 3, this percentage share is 7.7 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>SESAR 3 paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

²³ Article 83a.

Reply of the Joint Undertaking

3.2.11 The JU acknowledges the observation of the ECA and will address the issue fully in next year's annual accounts.

3.2.13 While Eurocontrol's contribution level was in line with the expectations until 2020, it decreased afterwards due to the COVID-19 pandemic, because of:

- a decrease of the private partners' activities until 2022, which directly impacted on Eurocontrol related contributions, including exercises and validations; and
- a request to Eurocontrol by its Member States to reduce its overall budget, in the context of a pandemic solidarity plan. Accordingly, it had to reduce its outsourcing budget and postpone recruitments for two years (while a significant number of its experts were retiring).

Nevertheless, most of the JU's Horizon 2020 projects have delivered and reached the expected maturity as planned. In the context of the SESAR 3 JU, Eurocontrol has renewed its commitment with a contribution of up to €500 million.

3.2.17 The late entry into force of the Council Regulation on 30 November 2021 establishing the JU under the 2021-2027 MFF, delayed the full set-up of the governance of the JU and therefore the adoption of the first work programme and the launch of the first calls for proposals, which could only be published on 7 April 2022.

3.2.19 The SESAR 3 JU will recover the over-claimed amounts from the beneficiary.

3.3. The Clean Aviation (CA) Joint Undertaking

Introduction

3.3.1. The [Clean Aviation \(CA\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031²⁴. The CA JU replaced and succeeded the Joint Undertaking for the implementation of the Joint Technology Initiative in Aeronautics, that was set up in December 2007 under the Seventh Research Framework Programme (FP7) for a period of ten years²⁵ (Clean Sky 1) and extended in May 2014 under the Horizon 2020 programme for a period until 31 December 2024²⁶ (Clean Sky 2).

3.3.2. CA JU is a public-private partnership focusing on research and innovation for transforming aviation towards a sustainable and climate neutral future. Its founding members are the EU, represented by the Commission, and the organisations from the aviation sector listed in the Annex I of the Single Basic Act²⁷. In addition, CA JU has associated members selected by calls for expression of interest.

3.3.3. [Table 3.3.1](#) presents key figures for the JU.

Table 3.3.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	415.3	189.9	119 %
Available commitment budget (million euros) ⁽¹⁾	411.2	182.6	125 %
Total staff as at 31 December ⁽²⁾	41	42	-2 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

²⁴ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

²⁵ [Council Regulation \(EC\) No 71/2007](#) setting up the Clean Sky 1 JU.

²⁶ [Council Regulation \(EU\) No 558/2014](#) establishing the Clean Sky 2 JU.

²⁷ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

The Clean Aviation (CA) Joint Undertaking

3.3.4. The changes in the size of the JU's budget as shown in [Table 3.3.1](#), largely depend on the implementation phase of the multiannual research and innovation programmes. In 2022, the JU started with the implementation of the Horizon Europe programme. Therefore, the 2022 budget includes the commitment budget for the first Horizon Europe calls planned for 2022, and the payment budget for the related pre-financing payments.

Information in support of the statement of assurance

3.3.5. Our audit approach, the basis for our opinion, the responsibilities of the CA JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page [141](#) forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.3.6. We have audited:

- (a) the accounts of the CA JU, which comprise the financial statements²⁸ and the reports on the implementation of the budget²⁹ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

²⁸ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

²⁹ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

Reliability of the accounts

Opinion on the reliability of the accounts

3.3.7. In our opinion, the accounts of the CA JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the CA JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.3.8. In our opinion, the revenue underlying the accounts of the CA JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.3.9. In our opinion, the payments underlying the accounts of the CA JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.3.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.3.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU and private members) differ significantly from each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only

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recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, was addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end.

3.3.12. In the following paragraphs, we provide an overview table on the members' contribution achievements per programme in 2022.

Implementation of the Horizon 2020 programme

3.3.13. *Table 3.3.2* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised at the end of 2022.

Table 3.3.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	1 716.0	39.0	N/A	1 755.0	1 682.7	N/A	N/A	N/A	1 682.7
Private members	1 189.6	39.0	965.3	2 193.8	30.5	829.3	139.0	1 223.1	2 221.9
Total	2 905.6	78.0	965.3	3 948.8	1 713.2	829.3	139.0	1 223.1	3 904.6

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

Members' legal commitments are at the level of their contribution targets

3.3.14. To provide a complete picture of the JU's achievements for the Horizon 2020 programme, it is necessary to also consider the current level of the JU members' operational obligations, in terms of signed grant agreements. At the end of 2022, the JU had fully committed €1 716 million of the maximum EU operational contribution for signed grant agreements under the Horizon 2020 programme. Of this committed amount, around €70.1 million (or 4.1 %) remains to be paid in the coming years for projects yet to be completed. At the same time, the private members had legally committed to provide in-kind contributions to the JU's operational activities of €968.3 million, and in-kind contributions to additional activities of €1 223.1 million or 101.6 % of the minimum target of €2 154.9 million. These committed amounts were fully reported at the end of 2022.

Implementation of the 2022 budget payment for Horizon 2020 activities decreased as beneficiaries faced problems due to COVID-19

3.3.15. For Horizon 2020 activities, the JU received no new operational commitment appropriations, as the JU had finished its last call for proposals by the end of 2020. The implementation rate for the operational payment appropriations was 78 % (2021: 83 %). For a

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considerable number of ongoing Horizon 2020 projects, the technical activities were delayed or had to be reduced due to COVID-19. Therefore, these projects had to be amended or prolonged and final payments postponed to 2023.

Implementation of the Horizon Europe programme

3.3.16. *Table 3.3.3* presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.3.3 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽¹⁾ validated	In-kind reported not validated	Total
EU (DG RTD)	1 660.8	39.2	1 700.0	178.0	N/A	N/A	178.0
Private members	2 360.8	39.2	2 400.0	1.9	0.0	0.0	1.9
Total	4 021.6	78.4	4 100.0	179.9	0.0	0.0	179.9

(1) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).

Source: ECA based on data from the JU and its founding regulation.

3.3.17. In 2022, the Commission made cash contributions of €178 million. The JU almost fully used the operational contribution of €176 million for pre-financing payments related to the first grant agreements concluded under the Horizon Europe programme.

Low implementation of the 2022 administrative budget

3.3.18. At the end of 2022, the implementation rate for the JU's administrative payment budget (Title 2) was low at 54 %. According to the JU's report on budgetary and financial management, this was mainly due to IT and communication services provided during the last quarter of 2022 and to be paid in 2023, and reduced costs for the services provided by the Commission.

Observations on the management and control systems

3.3.19. For Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD performed the ex-post audits. For Horizon 2020 expenditure (clearings and final payments), the JU reported a representative error rate of 1.6 % and a

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residual error rate of 0.4 %³⁰. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.3.20. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries³¹. For one case, we found and quantified a serious error resulting from overclaimed personnel cost because the beneficiary submitted a cost declaration based on budgeted staff costs.

Follow-up of previous years' observations

3.3.21. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

³⁰ CA JU 2022 Consolidated Annual Activity Report, chapter 4.1.1.

³¹ For grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2020	The JU significantly increased its use of interim staff. Such practice creates de-facto permanent posts, in excess of those foreseen in the staff establishment plans. This indicates that the JU's level of statutory staffing is not sufficient to implement the JU's research and innovation agenda and related work plans. This situation also presents significant risks for the JU, concerning the retention of key competences, unclear accountability channels, and lower staff efficiency that could negatively affect the JU's overall performance.	In 2022, the JU continued to use a significant number of interim staff, which it explained is due to the limitations of the fixed staff establishment plan and the exceptional workload caused by the parallel implementation of the Horizon 2020 and Horizon Europe programmes.	Open
2	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, CA (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations³² and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue</p>	CA paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.	Closed

³² Article 83a.

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
		related to the total revenue of the JU. For CA, this percentage share is 2.3 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.	The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.	
3	2021	In 2021, important documents were authorised by coping and pasting an image of the signature of the responsible authorising officer into the document in Word format and then converting the file into PDF format. This practice may present legal risks, as the regularity of the signed documents may be challenged.	CA introduced an adequate electronic signature in 2022.	Closed

Reply of the Joint Undertaking

3.3.11 The JU acknowledges the observation of the ECA and will address the issue fully in next year's annual accounts.

3.3.20 The JU agrees with the audit findings. In this context, the JU has implemented several ex-ante actions aiming at reducing similar errors by raising awareness among beneficiaries and JU officers in charge of grant implementation. These include:

- Organisation of informative events.
- Sharing the links to webinars offered by the EU Funding & Tenders portal.
- Communication to beneficiaries (in particular, to SMEs and newcomers) on how to avoid the most common errors when declaring costs for EU grants.

3.4. The Innovative Health Initiative (IHI) Joint Undertaking

Introduction

3.4.1. The [Innovative Health Initiative \(IHI\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031³³. The IHI JU replaced and succeeded the Innovative Medicines Initiative JU, that was set up in December 2007 under the Seventh Research Framework Programme (FP7) for a period of ten years³⁴ (IMI 1) and extended in May 2014 under the Horizon 2020 programme for a period until 31 December 2024³⁵ (IMI 2).

3.4.2. IHI JU is a public-private partnership focusing on interdisciplinary, sustainable, and patient-centric health research and innovation. Its founding members are the EU, represented by the Commission, and the European industry associations COCIR, European Federation of Pharmaceutical Industries and Associations including Vaccines Europe, EuropaBio, and MedTech Europe.

3.4.3. [Table 3.4.1](#) presents key figures for the JU.

Table 3.4.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	174.8	210.4	-17 %
Available commitment budget (million euros) ⁽¹⁾	272.4	11.0	2 376 %
Total staff as at 31 December ⁽²⁾	49	50	-2 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.4.4. The changes in the size of the JU's budget as shown in [Table 3.4.1](#), largely depend on the implementation phase of the multiannual research and innovation programmes. In

³³ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

³⁴ [Council Regulation \(EC\) No 73/2008](#) setting up the JU for the implementation of the Joint Technology Initiative on Innovative Medicines.

³⁵ [Council Regulation \(EU\) No 557/2014](#) establishing the Innovative Medicines Initiative 2 JU.

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2022, the JU started with the implementation of the Horizon Europe programme. Therefore, the 2022 budget includes the commitment budget for the first Horizon Europe calls planned for 2022.

Information in support of the statement of assurance

3.4.5. Our audit approach, the basis for our opinion, the responsibilities of the IHI management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page 141 forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.4.6. We have audited:

- (a) the accounts of the IHI JU, which comprise the financial statements³⁶ and the reports on the implementation of the budget³⁷ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.4.7. In our opinion, the accounts of the IHI JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the IHI JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net

³⁶ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

³⁷ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

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assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.4.8. In our opinion, the revenue underlying the accounts of the IHI JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.4.9. In our opinion, the payments underlying the accounts of the IHI JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.4.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.4.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU and private members) differ significantly from each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, was addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end, in terms of signed grant agreements and contracts.

3.4.12. In the following paragraphs, we provide an overview table on the members' contributions achievements per programme in 2022.

The Innovative Health Initiative (IHI) Joint Undertaking

Implementation of the FP7 programme

The JU has not yet completed the implementation of the programme

3.4.13. *Table 3.4.2* presents an overview of the members' contributions to the JU for the FP7 programme, at the end of 2022.

Table 3.4.2 – Members' contributions for FP7 (in € million)

Members	Members' contributions (as per Founding Regulation)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	966.0	34.0	N/A	1 000.0	938.4	N/A	N/A	N/A	938.4
Private members	966.0	34.0	N/A	1 000.0	21.9	808.9	23.0	N/A	853.8
Total	1 932.0	68.0	N/A	2 000.0	960.3	808.9	23.0	N/A	1 792.2

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

3.4.14. At the end of 2022, the JU had fully committed the maximum EU operational contributions of €966 million for signed grant agreements under the FP7 programme. Ten years after the end of the FP7 programme, around €44.9 million (or 5 %) still remains to be paid for projects yet to be completed. Private members had legally committed to provide in-kind contributions of €914.2 million or 94.6 % of the minimum operational target of €966 million. Of this committed amount, they reported €831.9 million (or 86 % of the target) at the end of 2022.

Implementation of the Horizon 2020 programme

3.4.15. *Table 3.4.3* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.4.3 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	1 595.4	42.6	N/A	1 638.0	991.7	N/A	N/A	N/A	991.7
EFPIA and Associated Partners	1 595.4	42.6	N/A	1 638.0	36.3	854.0	224.0	N/A	1 114.3
Total	3 190.8	85.2	N/A	3 276.0	1 028.0	854.0	224.0	N/A	2 106.0

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

The Innovative Health Initiative (IHI) Joint Undertaking

Members' legal commitments are at the level of their contribution targets

3.4.16. To provide a complete picture of the JU's achievements for the Horizon 2020 programme, it is necessary to also consider the current level of the JU members' operational obligations in terms of signed grant agreements. At the end of 2022, the JU had committed €1 452.1 million or 91 % of the maximum EU operational contribution of €1 595.4 million for signed grant agreements under the Horizon 2020 programme. Of this committed amount, around €484.8 million (or 33.4 %) remains to be paid in the coming years for projects yet to be completed. At the same time, private members and associated partners had legally committed to provide in-kind contributions of €1 499.4 million or 94 % of the minimum target of €1 595.4 million. Of this committed amount, they reported €1 078.9 million (or 67.6 % of the target) at the end of 2022.

Implementation of the 2022 budget payments for Horizon 2020 activities achieved 87 %

3.4.17. For Horizon 2020 activities, the JU received no new operational commitment appropriations, as the JU had finished its last call for proposals by the end of 2020. The implementation rate for the operational payment appropriations was at the level of 87 % compared to 96 % in 2021.

Implementation of the Horizon Europe programme

3.4.18. [Table 3.4.4](#) presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.4.4 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽¹⁾ validated	In-kind reported not validated	Total
EU (DG RTD)	1 169.8	30.2	1 200.0	1.4	N/A	N/A	1.4
Private members	969.8	30.2	1 000.0	1.4	0.0	0.0	1.4
Contributing partners	200.0	0.0	200.0	N/A	0.0	0.0	0.0
Total	2 339.6	60.4	2 400.0	2.8	0.0	0.0	2.8

(1) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).
At the JU level, IKAA shall not exceed 40 % of total private members' in-kind contributions.

Source: ECA based on data from the JU and its founding regulation.

3.4.19. In 2022, the Commission only made cash contributions of €1.4 million to the administrative costs of the JU. The JU did not request cash contributions for its Horizon Europe

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activities, as the two first calls launched in 2022 under Horizon Europe will only be finished in 2023.

Observations on the management and control systems

3.4.20. For FP7 expenditure, the JU performed ex-post audits, whilst for Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. The JU reported a representative error rate of 2.1 % and a residual error rate of 0.8 % for its FP7 expenditure, and a representative error rate of 2.7 % and a residual error rate of 0.9 % for its Horizon 2020 expenditure (clearings and final payments)³⁸. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.4.21. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries³⁹. We found no errors or control weaknesses at the JU beneficiaries sampled.

Follow-up of previous years' observations

3.4.22. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

³⁸ IHI JU 2022 Consolidated Annual Activity Report, chapter 4.1.1.

³⁹ For grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, IHI (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations⁴⁰ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For IHI, this percentage share is 2.5 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members (based on 2021 figures). The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>IHI paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

⁴⁰ Article 83a.

The Innovative Health Initiative (IHI) Joint Undertaking

Reply of the Joint Undertaking

3.4.11 For the 2023 annual accounts, the IHI JU will fine-tune the presentation.

3.4.16 The initial contribution target was reduced in agreement with the European Commission. The achievement rate of the reduced legal contribution target is 74%.

3.5. The Clean Hydrogen (Clean H2) Joint Undertaking

Introduction

3.5.1. The [Clean Hydrogen \(Clean H2\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031⁴¹. The Clean H2 JU replaced and succeeded the Joint Technology Initiative on Fuel Cells and Hydrogen that was set up in May 2008 under the Seventh Research Framework Programme (FP7) for the period up to 31 December 2017⁴² (FCH 1) and extended in May 2014 under the Horizon 2020 programme for a period until 31 December 2024⁴³ (FCH 2).

3.5.2. Clean H2 JU is a public-private partnership in the field of hydrogen and fuel cells technology research and innovation. Its founding members are the EU, represented by the Commission, the industry association (Hydrogen Europe) and the research association (Hydrogen Europe Research).

3.5.3. [Table 3.5.1](#) presents key figures for the JU.

Table 3.5.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	118.3	56.2	110 %
Available commitment budget (million euros) ⁽¹⁾	314.3	15.8	1 889 %
Total staff as at 31 December ⁽²⁾	29	27	7 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.5.4. The changes in the size of the JU's budget as shown in [Table 3.5.1](#), largely depend on the implementation phase of the multiannual research and innovation programmes, which it is implementing. In 2022, the JU started with the implementation of the Horizon Europe programme. Therefore, the 2022 budget includes the commitment budget for the first Horizon

⁴¹ Council Regulation (EU) 2021/2085 establishing the Joint Undertakings under Horizon Europe.

⁴² Council Regulation (EC) No 521/2008 setting up the Fuel Cells and Hydrogen JU.

⁴³ Council Regulation (EU) No 559/2014 establishing the Fuel Cells and Hydrogen 2 JU.

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Europe calls planned for 2022, and the payment budget for the related pre-financing payments.

Information in support of the statement of assurance

3.5.5. Our audit approach, the basis for our opinion, the responsibilities of the Clean H2 JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page [141](#) forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.5.6. We have audited:

- (a) the accounts of the Clean H2 JU, which comprise the financial statements⁴⁴ and the reports on the implementation of the budget⁴⁵ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.5.7. In our opinion, the accounts of the Clean H2 JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the Clean H2 JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation

⁴⁴ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

⁴⁵ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

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and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.5.8. In our opinion, the revenue underlying the accounts of the Clean H2 JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.5.9. In our opinion, the payments underlying the accounts of the Clean H2 JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.5.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.5.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU and private members) differ significantly from each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, was addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end, in terms of signed grant agreements and contracts.

3.5.12. In the following paragraphs, we provide an overview table on the members' contributions achievements per programme in 2022.

The Clean Hydrogen (Clean H2) Joint Undertaking

Implementation of the FP7 programme

The JU achieved the members' contribution targets

3.5.13. *Table 3.5.2* presents an overview of the contribution targets of the JU's members for the FP7 programme compared to the level of members' contributions (cash and in-kind) recognised at the end of 2022.

Table 3.5.2 – Members' contributions for FP7 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	450.0	20.0	N/A	470.0	407.4	19.1	N/A	N/A	426.5
Private members	450.0	20.0	N/A	470.0	17.9	450.0	10.7	N/A	478.6
Total	900.0	40.0	N/A	940.0	425.3	469.1	10.7	N/A	905.1

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

3.5.14. At the end of 2022, the JU had committed €425.8 million or 95 % of the maximum EU operational contribution of €450 million for signed grant agreements under the FP7 programme. Of this committed amount, around €3 million (or 0.7 %) remained to be paid in 2023 for the closure of the last ongoing FP7 project. On the other hand, at the end of 2022, private members declared in-kind contributions at the level of the minimum target of €450 million, which had been fully validated by the JU.

Implementation of the Horizon 2020 programme

3.5.15. *Table 3.5.3* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.5.3 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	646.0	19.0	N/A	665.0	573.1	N/A	N/A	N/A	573.1
Private members	76.0	19.0	285.0	380.0	14.8	51.7	47.3	1 039.0	1 152.8
Total	722.0	38.0	285.0	1 045.0	587.9	51.7	47.3	1 039.0	1 725.9

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

3.5.16. The low level of validated private members' in-kind contributions for operational activities of €51.7 million (2021: €38.6 million), is because the JU certifies them later, when the

The Clean Hydrogen (Clean H2) Joint Undertaking

final payments for the Horizon 2020 projects are made and the certificates of financial statement are due.

Members' legal commitments are at the level of their contribution targets

3.5.17. To provide a complete picture of the JU's achievements for the Horizon 2020 programme, it is necessary to also consider the current level of the JU members' operational obligations in terms of signed grant agreements and contracts. At the end of 2022, the JU had fully committed the maximum EU operational contribution €646 million for signed grant agreements and contracts under the Horizon 2020 programme. Of this committed amount, around €88.5 million (or 13.7 %) remains to be paid in the coming years for projects and contracts yet to be completed. At the same time, the private members had legally committed to provide in-kind contributions to the JU's operational activities of €190.5 million, and in-kind contributions to the additional activities of €1 039 million or 340.6 % of the minimum target of €361 million. These committed amounts were fully reported at the end of 2022.

Implementation of the 2022 budget payments for Horizon 2020 activities decreased as beneficiaries faced rising costs and delivery problems

3.5.18. For Horizon 2020 activities, the JU received no new operational commitment appropriations, as the JU had finished its last call for proposals by the end of 2020. The implementation rate for the operational payment appropriations was 81 % (2021: 88 %), which, according to the JU, was due to the rising costs and delivery problems faced by beneficiaries arising from the COVID-19 crisis and the war in Ukraine. Therefore, the duration of most Horizon 2020 projects had to be prolonged and final payments postponed to 2023.

Implementation of the Horizon Europe programme

3.5.19. [Table 3.5.4](#) presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.5.4 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽¹⁾ validated	In-kind reported not validated	Total
EU (DG RTD)	969.8	30.2	1 000.0	80.0	N/A	N/A	80.0
Private members	969.8	30.2	1 000.0	0.0	0.0	0.0	0.0
Total	1 939.6	60.4	2 000.0	80.0	0.0	0.0	80.0

(1) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).

Source: ECA based on data from the JU and its founding regulation.

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3.5.20. In 2022, the Commission made cash contributions of €80 million, of which the JU used €47 million (or 59 %) for pre-financing payments related to the first grant agreements concluded under the Horizon Europe programme. The evaluation of the 2022 call resulted in the withdrawal of four topics for which no suitable proposals had been submitted. The JU transferred the unused payment budget of €33 million to 2023, for the payment of pre-financings related to new grant agreements, planned to be signed at the beginning of 2023.

Low implementation of the 2022 administrative budget

3.5.21. At the end of 2022, the implementation rates for the administrative budget (Title 2) were low with 62 % of commitment appropriations and 51 % of payment appropriations. The JU explained that this was due to the payment suspensions concerning the arrangement of the Hydrogen Week event, the postponed procurement for the refurbishment of the office building, and the delayed conclusion of an important service framework contract.

Observations on the management and control systems

3.5.22. For FP7 expenditure, the JU performed ex-post audits, whilst for Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. For the final FP7 expenditure made in 2022, the JU did not perform ex-post audits, due to the insignificant amounts. Accordingly, it published, as final error rates for FP7 expenditure, the representative error rate of 2.0 % and the residual error rate of 1.1 % it achieved at the end of 2021. For the JU's Horizon 2020 expenditure (clearings and final payments), the JU reported a representative error rate of 2.9 % and a residual error rate of 0.9 %⁴⁶. For the Horizon Europe programme, no ex-post audits were carried out, as the first interim payments are only expected in 2024.

3.5.23. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries⁴⁷. For one case, we found and quantified a serious error resulting from personnel costs because the beneficiary claimed hours worked during leave periods and included ineligible additional remuneration costs in the costs declared. For another case, we found and quantified a serious error resulting from cost claimed for equipment, which the beneficiary did not use during the reporting period, and from incorrectly calculated personnel costs.

⁴⁶ Clean H2 JU 2022 Consolidated Annual Activity Report, chapter 4.1.1.1.

⁴⁷ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

The Clean Hydrogen (Clean H2) Joint Undertaking

Observations on other issues

3.5.24. According to the [Staff Regulations](#)⁴⁸ and the JU's guidelines, the staff committee should designate at least one member to the selection committee for external recruitment procedures. We found that the selection committee for the audited recruitment procedure did not include a member designated by the staff committee. The JU could not establish a staff committee despite launching several calls for interest amongst its staff.

Follow-up of previous years' observations

3.5.25. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

⁴⁸ Article 9 in combination with Article 1a.

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, Clean H2 (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations⁴⁹ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For Clean H2, this percentage share is 2.9 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>Clean H2 paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

⁴⁹ Article 83a.

Reply of the Joint Undertaking

3.5.11 The JU acknowledges the observation of the ECA and will address the issue in the next year's annual accounts.

3.5.23 In the first instance, the JU will use the observations of ECA to further improve its existing risk-based control strategy in the direction of preventive measures, applied to a specific layer of the JU payments towards smaller beneficiaries and newcomers.

In the second instance, the observation of ECA is related to a timing difference in the cost eligibility. The JU, before validating the payment, had instructed the beneficiary to remove the related equipment costs from the current financial statements. However, H2020 simplification rule allows beneficiaries not to detail the costs falling below 15% threshold of the personnel costs claimed. Therefore, the entire cost of equipment was not fully visible to the JU. In future, as a corrective measure, the JU will instruct their beneficiaries to always include and detail the most expensive equipment items at their full value.

3.5.24 Due to COVID-19 related circumstances, despite several attempts in the past two years, the establishment of the new staff committee, was not practically possible. However, since early in 2023, the staff committee is already in place and fully operational.

3.6. The Key Digital Technologies (KDT) Joint Undertaking

Introduction

3.6.1. The [Key Digital Technologies \(KDT\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031⁵⁰. The KDT JU replaced and succeeded the Electronic Components and Systems for European Leadership (ECSEL) JU that was set up in May 2014 under the Horizon 2020 programme, for a period until 31 December 2024⁵¹. On 26 June 2014, the ECSEL JU replaced and succeeded the European Nano-electronic Initiative Advisory Council and the JU for Advanced Research and Technology for Embedded Intelligence and Systems.

3.6.2. KDT JU is a public-private partnership focusing on research and innovation in key digital technologies essential for Europe's competitive leadership in digital economy, in particular, in the electronic components and systems sector. Its founding members are the EU, represented by the Commission, the [Participating States](#), and three industry associations (the European Association on Smart System Integration, the Association for European Nano Electronics Activities, and the Inside Industry Association), representing stakeholders in micro- and nano-electronics, smart integrated systems and embedded/cyber-physical systems respectively.

3.6.3. In July 2023, the Council adopted an amending regulation to transform KDT JU into the Chips JU⁵². According to the amendment, the Chips JU's enhanced remit is to foster the development of innovative next-generation semiconductor technologies and reinforce the European chip-production capability under the "Chips for Europe Initiative". For this, EU contributions to the JU will increase from €1.8 billion to €4.2 billion, €2.7 billion to be funded from the Horizon Europe programme, and €1.5 billion from the Digital Europe programme.

⁵⁰ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

⁵¹ [Council Regulation \(EU\) No 561/2014](#) establishing the ECSEL JU.

⁵² [Council Regulation \(EU\) 2023/1782](#) amending Regulation (EU) 2021/2085 establishing the JUs under Horizon Europe, as regards the Chips Joint Undertaking.

The Key Digital Technologies (KDT) Joint Undertaking

3.6.4. *Table 3.6.1* presents key figures for the JU.

Table 3.6.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	222.2	199.3	11 %
Available commitment budget (million euros) ⁽¹⁾	261.4	214.0	22 %
Total staff as at 31 December ⁽²⁾	25	29	-14 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.6.5. The changes in the size of the JU's budget as shown in *Table 3.6.1*, largely depend on the implementation phase of the multiannual research and innovation programmes, which the JU is implementing. The JU started to launch the first Horizon Europe calls already end 2021. The 2022 budget includes the commitment budget for the Horizon Europe calls planned for 2022, and the payment budget for the related pre-financing payments.

Information in support of the statement of assurance

3.6.6. Our audit approach, the basis for our opinion, the responsibilities of the KDT JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page 141 forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.6.7. We have audited:

- (a) the accounts of the KDT JU, which comprise the financial statements⁵³ and the reports on the implementation of the budget⁵⁴ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.6.8. In our opinion, the accounts of the KDT JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the KDT JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

⁵³ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

⁵⁴ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The Key Digital Technologies (KDT) Joint Undertaking

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.6.9. In our opinion, the revenue underlying the accounts of the KDT JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.6.10. In our opinion, the payments underlying the accounts of the KDT JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.6.11. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.6.12. In its 2022 annual accounts, the JU did not disclose important information regarding members' contributions at programme level, relevant for the complete communication of the JU's achievements at the year end. In particular, the JU did not compare the contributions received from each member category up to the year end under each programme with the legal contribution targets set for the respective programme. Moreover, in these accounts, the JU did not disclose the Participating States' contributions to the JU.

3.6.13. In the following paragraphs, we provide an overview table on the members' contributions achievements per programme in 2022.

The Key Digital Technologies (KDT) Joint Undertaking

Implementation of the Horizon 2020 programme

3.6.14. *Table 3.6.2* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.6.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind estimated not validated	In-kind to additional activities	Total
EU (DG CNCT)	1 169.7	15.3	N/A	1 185.0	1 158.6	N/A	N/A	N/A	1 158.6
Private members	1 617.5	40.0	N/A	1 657.5	24.3	406.5	1 172.5	N/A	1 603.3
Participating States ⁽²⁾	1 170.0	N/A	N/A	1 170.0	495.3	N/A	N/A	N/A	495.3
Total	3 957.2	55.3	N/A	4 012.5	1 678.2	406.5	1 172.5	N/A	3 257.2

(1) Additional activities are outside ECA's audit scope.

(2) Participating States pay their contributions directly to the beneficiaries. These cash contributions are not presented in the JU's annual accounts.

Source: ECA based on data from the JU and its founding regulation.

Most of the JU's private members' in-kind contributions remain to be validated

3.6.15. To provide a complete picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations in terms of grant agreements. At the end of 2022, the JU had fully committed the maximum EU operational contribution of €1 169.7 million for signed grant agreements under the Horizon 2020 programme. Of this committed amount, around €139.2 million (or 11.9 %) remains to be paid in the coming years for projects yet to be completed.

3.6.16. At the end of 2022, the JU estimated the private members' potential final in-kind contributions for operational Horizon 2020 activities at €1 579 million or 97.6 % of the minimum target of €1 617.5 million. The JU can only calculate and validate private members' in-kind contributions once all payments have been made by both the JU and the Participating States and all end-of-project certificates and related certificates of financial statements have been received. In this context, and given that at the end of 2022 only a limited number of Horizon 2020 projects had been finalised, the validated industry in-kind contributions amounted to €406.5 million (or 25 % of the target).

3.6.17. Based on the JU's Public Authorities Board funding decisions for the calls for proposals from 2014 to 2020, we estimated that, at the end of 2022, the Participating States signed contractual commitments amounting to €1 106.2 million (or 95 % of the target). Of this amount, they declared total financial contributions of €495.3 million, which they paid directly to the national beneficiaries of the Horizon 2020 projects they supported. The difference arises

The Key Digital Technologies (KDT) Joint Undertaking

because Participating States only recognise and report their costs to the JU on the completion of the Horizon 2020 projects they support.

Implementation of the 2022 budget payments for Horizon 2020 activities worsened as beneficiaries faced rising costs and delivery problems

3.6.18. For Horizon 2020 activities, the JU received no new operational commitment appropriations, as the JU had finished its last call for proposals by the end of 2020. The implementation rate for the operational payment appropriations fell to 74 % (2021: 85 %), which, according to the JU, was due to the problems beneficiaries faced arising from COVID-19. For a considerable number of ongoing Horizon 2020 projects, the technical activities were delayed either because of shortage of chips materials or because staff was not able to access the development and testing facilities. Therefore, these projects had to be amended or prolonged and final payments postponed to 2023.

Implementation of Horizon Europe programmes

3.6.19. [Table 3.6.3](#) presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.6.3 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Single Basic Act)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽²⁾ validated	In-kind estimated not validated	Total
EU (DG CNCT)	1 773.7	26.3	1 800.0	171.7	N/A	N/A	171.7
Private members	2 484.8	26.3	2 511.1	0.0	0.0	0.0	0.0
Participating states ⁽¹⁾	1 773.7	N/A	1 773.7	0.0	N/A	N/A	0.0
Total	6 032.2	52.6	6 084.8	171.7	0.0	0.0	171.7

(1) Participating States pay their contributions directly to the beneficiaries. These cash contributions are not presented in the JU's annual accounts.

(2) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).

Source: ECA based on data from the JU and its founding regulation.

The Key Digital Technologies (KDT) Joint Undertaking

3.6.20. At the end of 2022, the Commission made cash contributions of €171.7 million, of which the JU used €42.3 million (or 25 %) for pre-financing payments related to the first grant agreements concluded under the Horizon Europe programme.

Low implementation of the 2022 administrative budget

3.6.21. At the end of 2022, the implementation rate regarding the JU's administrative payment budget (Title 2) was low at 63 %. According to the JU's 2022 budgetary and financial management report, this was mainly due to the postponement of the IT tools in support of the Central Management of Financial Contributions, and the reduced communication activities.

Observations on the management and control systems

3.6.22. For Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. For Horizon 2020 expenditure (clearings and final payments), the JU reported a representative error rate of 2.6 % and a residual error rate of 0.8 %⁵⁵. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.6.23. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries⁵⁶. We found no errors or control weaknesses at the JU beneficiaries sampled.

Follow-up of previous years' observations

3.6.24. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

⁵⁵ KDT JU 2022 Consolidated Annual Activity Report, chapter 4.1.1.1.

⁵⁶ For the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, KDT (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations⁵⁷ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For KDT, this percentage share is 50.1 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>KDT paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

⁵⁷ Article 83a.

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
2	2021	The JU's additional resource needs for implementing the planned Central Management of Financial Contributions system was neither assessed by the Commission nor included in the JU's initial staff resource estimates for the implementation of the Horizon Europe programme.	The actions are outside the remit of the JU.	Closed
3	2021	With the Commission's proposal amending the Single Basic Act ⁵⁸ , the KDT JU will be transformed into the future Chips JU. According to this proposal, the JU will implement projects of about €10.9 billion under the 2021-2027 MFF and should recruit additional 19 staff members to achieve the planned 50 statutory staff by 2025. As the JU had only 29 staff members at the end of 2021, it may face considerable human resources challenges in managing these new recruitments, in addition to the new administrative and operational processes yet to be established.	At the end of 2022, the number of the statutory staff filled by the JU dropped to 25 of the 30 posts proposed in the 2022 establishment plan.	Open

⁵⁸ [Proposal for a Council regulation](#) amending Regulation (EU) 2021/2085 establishing the JUs under HE, as regards the Chips Joint Undertaking, COM(2022) 47 final.

Reply of the Joint Undertaking

3.6.12 For future annual accounts, the KDT JU will consider enhancing this information, in particular, regarding the comparison to the respective programmes' legal targets. In this respect, it will work together with the other JUs on a harmonised template for the annual accounts. In addition, the requested information will also be provided in the report on budgetary and financial management.

3.6.16 The KDT JU's Council Regulation Article 16.3.c establishes the private members' in-kind contributions as total costs incurred by the private members less the financial contribution of KTD JU and less the financial contribution of the Participating States. As no recognition of actual costs or payment is done by the Participating States until the projects are finalised, only estimations of the in-kind contributions can be provided by the private members.

3.6.18 Implementation of the 2022 budget for Horizon 2020 activities worsened as beneficiaries faced rising costs and delivery problems arising from the COVID-19 pandemic situation.

3.7. The Circular Bio-based Europe (CBE) Joint Undertaking

Introduction

3.7.1. The [Circular Bio-based Europe \(CBE\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031⁵⁹. The CBE JU replaced and succeeded the Bio-based Industries (BBI) JU that was set up in May 2014 under the Horizon 2020 programme for a period until 31 December 2024⁶⁰.

3.7.2. CBE JU is a public-private partnership focusing on research and innovation for a sustainable and competitive circular bio-based industries sector. Its founding members are the EU, represented by the Commission, and industrial partners represented by the Bio-based Industries Consortium.

3.7.3. [Table 3.7.1](#) presents key figures for the JU.

Table 3.7.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	80.3	174.8	-54 %
Available commitment budget (million euros) ⁽¹⁾	264.2	5.3	4 885 %
Total staff as at 31 December ⁽²⁾	26	22	18 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.7.4. The changes in the size of the JU's budget as shown in [Table 3.7.1](#), largely depend on the implementation phase of the multiannual research and innovation programmes, which it is implementing. In 2022, the JU started with the implementation of the Horizon Europe programme. Therefore, the 2022 budget includes the commitment budget for the first Horizon Europe calls planned for 2021 and 2022.

⁵⁹ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

⁶⁰ [Council Regulation \(EU\) No 560/2014](#) establishing the BBI JU.

Information in support of the statement of assurance

3.7.5. Our audit approach, the basis for our opinion, the responsibilities of the CBE JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page 141 forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.7.6. We have audited:

- (a) the accounts of the CBE JU, which comprise the financial statements⁶¹ and the reports on the implementation of the budget⁶² for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.7.7. In our opinion, the accounts of the CBE JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the CBE JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

⁶¹ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

⁶² The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.7.8. In our opinion, the revenue underlying the accounts of the CBE JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.7.9. In our opinion, the payments underlying the accounts of the CBE JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.7.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.7.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU and private members) differ significantly from each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, was addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end, in terms of signed grant agreements and contracts.

3.7.12. In the following paragraphs, we provide an overview table on the members' contributions achievements per programme in 2022.

The Circular Bio-based Europe (CBE) Joint Undertaking

Implementation of the Horizon 2020 programme

3.7.13. *Table 3.7.2* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.7.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)				Members' contributions (as at 31.12.2022)				
	Operational activities ⁽¹⁾	Administrative costs	Additional activities ⁽²⁾	Total	Cash	In-kind validated	In-kind estimated not validated	In-kind to additional activities	Total
EU (DG RTD)	815.8	19.2	N/A	835.0	770.3	N/A	N/A	N/A	770.3
Private members	475.3	19.2	2 235.5	2 730.0	22.5	65.9	67.6	1 797.9	1 953.9
Total	1 291.1	38.4	2 235.5	3 565.0	792.8	65.9	67.6	1 797.9	2 724.2

(1) EU and private members' cash contribution targets as reduced by €140 million. Private members' in-kind contribution targets as set in the JU's annual work programmes.

(2) Additional activities are outside ECA's audit scope. Their minimum target of €1 755 million was raised to €2 235.5 for private members to achieve the total minimum contribution obligation of at least €2 730 million.

Source: ECA based on data from the JU and its founding regulation.

3.7.14. The validated private members' in-kind contributions for operational activities remained low at €65.9 million because the JU only certifies them when the final payments for the Horizon 2020 projects are made, and the certificates of financial statement are due.

Private members will not achieve their contribution target for operational activities at the end of the programme implementation

3.7.15. To provide a complete picture of the JU's achievements for the Horizon 2020 programme, it is necessary to also consider the current level of the JU members' operational obligations in terms of signed grant agreements. At the end of 2022, the JU had fully committed the maximum EU operational contribution of €815.8 million for signed grant agreements under the Horizon 2020 programme. Of this committed amount, around €94 million (or 11.5 %) remains to be paid in the coming years for projects yet to be completed.

3.7.16. On the other hand, at the end of 2022, the private members had legally committed to provide in-kind and financial contributions to the JU's operational activities of €258.4 million or 54 % of the indicative target of €475.3 million set in the JU's adopted annual working programmes. Of this committed amount, they reported €154.7 million (or 32.5 % of the target) at the end of 2022. In 2022, the JU had to cancel around €8.2 million of signed projects due to the unforeseen termination of a Horizon 2020 flagship project and suspension of several other projects. As all Horizon 2020 calls were closed at the end of 2020, the JU will not achieve the indicative target for private members' contributions to the JU's operational activities by the end of the programme period. While the JU stated that it achieved the operational objectives for its Horizon 2020 calls, this significant reduction in private members' contributions presents a risk to the overall achievement of the JU's Horizon 2020 programme.

The Circular Bio-based Europe (CBE) Joint Undertaking

3.7.17. To ensure the achievement of the private members' overall contribution target of €2 730 million set in the JU's Founding Regulation by the end of the programme period, the JU revised upwards to €2 235.5 million, its target for private members' in-kind contribution to additional activities. At the end of 2022, the private members reported total in-kind contributions to additional activities of €1 797.9 million or 73.8 % of the new target, but for €658 million or 37 % of the reported amount, the certification process was not concluded. To mitigate the JU's risk of not achieving the new target for in-kind contributions to additional activities by the end of the programme, the Bio-based Industries Consortium proposed to the JU's Governing Board in November 2022, to approve further private members' investment of €416 million for additional activities in 2023.

Implementation of the 2022 budget payments for Horizon 2020 activities worsened as beneficiaries faced rising costs and delivery problems

3.7.18. For Horizon 2020 activities, the JU received no new operational commitment appropriations, as the JU had finished its last call for proposals by the end of 2020. The implementation rate for the operational payment appropriations fell to 65 % (2021: 85 %), which, according to the JU, was due to the rising costs and delivery problems faced by beneficiaries arising from the COVID-19 crisis and the war in Ukraine. Therefore, the duration of most Horizon 2020 projects had to be prolonged and final payments postponed to 2023.

Implementation of Horizon Europe programme

3.7.19. [Table 3.7.3](#) presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.7.3 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽¹⁾ validated	In-kind estimated not validated	Total
EU (DG RTD)	976.5	23.5	1 000.0	0.8	N/A	N/A	0.8
Private members	976.5	23.5	1 000.0	0.8	0.0	0.0	0.8
Total	1 953.0	47.0	2 000.0	1.7	0.0	0.0	1.7

(1) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).

Source: ECA based on data from the JU and its founding regulation.

3.7.20. In 2022, the JU implemented only 47 % of its commitment budget for projects under the first significant Horizon Europe call of €120 million, it had launched earlier in the year.

The Circular Bio-based Europe (CBE) Joint Undertaking

3.7.21. In 2022, the Commission and private members made cash contributions of €0.8 million each to the administrative costs of the JU. The JU did not request cash contributions for its Horizon Europe activities, as it only expected to finish the first Horizon Europe call it had launched early in 2022, in the first half of 2023.

Low implementation of the 2022 administrative budget

3.7.22. At the end of 2022, the implementation rate regarding the JU's salary payment budget (Title 1) was low at 55 %. According to the JU, this was due to the delayed start of employment contracts of staff newly recruited in 2022.

Observations on the management and control systems

3.7.23. For Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. For Horizon 2020 expenditure (clearings and final payments), the JU reported a representative error rate of 1.9 % and a residual error rate of 1.2 %⁶³. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.7.24. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries⁶⁴. For one case, we found and quantified a serious error resulting from overclaimed personnel cost because the beneficiary changed the calculation method for the hourly rate within the financial year and included ineligible pension costs and bonuses in the costs declared.

Follow-up of previous years' observations

3.7.25. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

⁶³ CBE JU 2022 Consolidated Annual Activity Report, chapter 4.1.2.

⁶⁴ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2020, 2021	<p>According to the JU's founding regulation, the industry members should contribute in cash, at least €182.5 million to the JU's operational costs. However, the industry members' cash contributions to the JU operational costs remained at the low level of €3.3 million. Consequently, the Commission reduced its target for cash contributions to the JU by €140 million.</p> <p>At the end of 2021, private members had legally committed to provide in-kind and financial contributions of €266.5 million or 56 % of the indicative target of €475.3 million set in the JU's adopted annual working programmes. As all Horizon 2020 calls have been closed at the end 2020, the JU will not achieve the indicative target for its private members by the end of the programme period.</p>	<p>For the situation at the end of 2022, see paragraph 3.7.16.</p> <p>The CBE kept the private members' cash contributions to the operational costs of the JU at the low level of €3.3 million.</p>	Open

The Circular Bio-based Europe (CBE) Joint Undertaking

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
2	2021	At the end of 2021, the industry members reported total in-kind contributions to additional activities of €1 646.5 million or 74 % of the target of €2 225.4 million. However, for €715.6 million or 43 % of the reported amount, the certification process was not concluded. This private members' commitment may mitigate the JU's risk of not achieving the target for in-kind contributions for additional activities by the end of the Horizon 2020 programme.	<p>For the situation at the end of 2022, see paragraphs 3.7.17.</p> <p>To ensure the achievement of the target by the end of the programme, the JU's Governing Board approved in February 2022, additional €658 million of industry members' investments into 2022 activities closely linked to the JU's strategic objectives.</p>	Open

The Circular Bio-based Europe (CBE) Joint Undertaking

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
3	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, CBE (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations⁶⁵ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For CBE, this percentage share is 2.3 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>CBE paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

⁶⁵ Article 83a.

Reply of the Joint Undertaking

3.7.11 CBE acknowledges the observation of the ECA and will address the issue in the next year's annual accounts.

3.7.14 CBE acknowledges the observation of the ECA and will address the issue in the next year's annual accounts.

3.7.16 CBE JU acknowledges the low level of private members' in-kind contributions to its operational activities. This situation can be partly explained by the openness of the JU's calls, where also non-members of BIC may apply for BBI grants without any obligation to support the JU initiative with in-kind contributions. The number of successful applicants from BIC decreased to its minimum for the last three calls, causing a significant decrease in in-kind contributions.

3.8. Europe's Rail (EU-Rail) Joint Undertaking

Introduction

3.8.1. The [Europe's Rail \(EU-Rail\) JU](#), located in Brussels, was set up in November 2021 under the Horizon Europe programme for the period ending on 31 December 2031⁶⁶. The EU-Rail JU replaced and succeeded the Shift2Rail (S2R) JU that was set up in June 2014 under the Horizon 2020 programme for a period until 31 December 2024⁶⁷.

3.8.2. EU-Rail JU is a public-private partnership for research and innovation in the railway sector. Its founding members are the EU, represented by the Commission, and rail industry partners (including rail equipment manufacturers, railway companies, infrastructure managers, and research centres).

3.8.3. [Table 3.8.1](#) presents key figures for the JU.

Table 3.8.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	180.8	68.4	164 %
Available commitment budget (million euros) ⁽¹⁾	171.4	13.6	1 160 %
Total staff as at 31 December ⁽²⁾	28	19	47 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.8.4. The changes in the size of the JU's budget as shown in [Table 3.8.1](#), largely depend on the implementation phase of the multiannual research and innovation programmes. In 2022, the JU started with the implementation of the Horizon Europe programme. Therefore, the 2022 budget includes the commitment budget for the first Horizon Europe calls planned for 2022, and the payment budget for the related pre-financing payments.

⁶⁶ [Council Regulation \(EU\) 2021/2085](#) establishing the Joint Undertakings under Horizon Europe.

⁶⁷ [Council Regulation \(EU\) No 642/2014](#) establishing the Shift2Rail JU.

Information in support of the statement of assurance

3.8.5. Our audit approach, the basis for our opinion, the responsibilities of the EU-Rail JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page 141 forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.8.6. We have audited:

- (a) the accounts of the EU-Rail JU, which comprise the financial statements⁶⁸ and the reports on the implementation of the budget⁶⁹ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.8.7. In our opinion, the accounts of the EU-Rail JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the EU-Rail JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

⁶⁸ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

⁶⁹ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.8.8. In our opinion, the revenue underlying the accounts of the EU Rail JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.8.9. In our opinion, the payments underlying the accounts of the EU Rail JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.8.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.8.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU and private members) differ significantly from each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, was addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end, in terms of signed grant agreements and contracts.

3.8.12. In the following paragraphs, we provide an overview table on the members' contributions achievements per programme in 2022.

Europe's Rail (EU-Rail) Joint Undertaking

Implementation of the Horizon 2020 programme

3.8.13. *Table 3.8.2* presents an overview of the contribution targets of the JU's members for the Horizon 2020 programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.8.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽¹⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG Move)	384.5	13.5	0.0	398.0	383.8	N/A	N/A	N/A	383.8
Private members	336.5	13.5	120.0	470.0	11.7	253.2	67.5	244.0	576.4
Total	721.0	27.0	120.0	868.0	395.5	253.2	67.5	244.0	960.2

(1) Additional activities are outside ECA's audit scope.

Source: ECA based on data from the JU and its founding regulation.

Members' legal commitments are at the level of their contribution targets

3.8.14. To provide a complete picture of the JU's achievements for the Horizon 2020 programme, it is necessary to also consider the current level of the JU members' operational obligations in terms of signed grant agreements and contracts. At the end of 2022, the JU had fully committed the maximum EU operational contribution of €384.5 million for signed grant agreements and contracts under the Horizon 2020 programme. Of this committed amount, around €68.2 million (or 18 %) remains to be paid in the coming years for projects yet to be completed. At the same time, the private members had legally committed to provide in-kind contributions to the JU's operational activities of €320.7 million, and in-kind contributions to additional activities of €244 million or 123.7 % of the minimum target of €456.5 million. These committed amounts were reported at the end of 2022.

Implementation of the 2022 budget payments for Horizon 2020 activities worsened as beneficiaries faced rising costs and delivery problems

3.8.15. For Horizon 2020 activities, the JU received no new operational commitment appropriations as the JU had finished its last call for proposals by the end of 2021. The implementation rate for the operational payment appropriations, including operational unused and reallocated appropriations, fell to 47 % (2021: 61 %). According to the JU, this was due to the rising costs and delivery problems faced by beneficiaries arising from the COVID-19 crisis and the war in Ukraine. Therefore, the duration of most Horizon 2020 projects had to be prolonged and final payments postponed to 2023.

Europe's Rail (EU-Rail) Joint Undertaking

Implementation of the Horizon Europe programme

3.8.16. *Table 3.8.3* presents an overview of the contribution targets of the JU's members for the Horizon Europe programme compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.8.3 – Members' contributions for Horizon Europe (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽¹⁾ validated	In-kind reported not validated	Total
EU (DG RTD)	576.0	24.0	600.0	108.9	N/A	N/A	108.9
Private members	576.0	24.0	600.0	3.5	0.0	4.5	8.0
Total	1 152.0	48.0	1 200.0	112.4	0.0	4.5	116.9

(1) Consists of in-kind contributions to operational activities (IKOP) and in-kind contributions to additional activities (IKAA).

Source: ECA based on data from the JU and its founding regulation.

3.8.17. In 2022, the Commission made cash contributions of €108.9 million. The JU had successfully closed the first two calls under the Horizon Europe programme, and almost fully used the operational contribution part of €107.5 million for pre-financing the first grant agreements concluded under the programme.

Observations on the management and control systems

3.8.18. For Horizon 2020 and Horizon Europe expenditure, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. For Horizon 2020 expenditure (clearings and final payments), the JU reported a representative error rate of 2.2 % and a residual error rate of 1.3 %⁷⁰. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.8.19. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries⁷¹. For one case, we found and quantified a serious error resulting from overclaimed personnel cost because the beneficiary considered indirect costs in the calculation basis of the cost centres' unit cost rates. Such costs are, however, covered by the 25 % flat rate for indirect costs.

⁷⁰ EU-Rail JU Consolidated Annual Activity Report 2022, chapter 4.1.1.

⁷¹ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

Follow-up of previous years' observations

3.8.20. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, EU-Rail (and its predecessor) have not yet paid such contributions.</p> <p>In line with the Staff Regulations⁷² and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For EU-Rail, this percentage share is 3.8 % (based on 2021 figures). However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>EU-Rail paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

⁷² Article 83a.

Europe's Rail (EU-Rail) Joint Undertaking

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
2	2021	The implementation rate for the JU's 2021 operational payment budget available, including operational unused and reallocated appropriations, fell to 61 % (2020: 76 %). This situation was mainly caused by the poor quality of the beneficiaries' technical reports and the need of additional evidence confirming the achievement of the project results and the fact that the delay of a single beneficiary affects the payment of the whole lump-sum amount.	For the situation at the end of 2022, see paragraph 3.8.15 . In 2022, the JU developed an action plan to improve the beneficiaries' financial reporting.	Open

Reply of the Joint Undertaking

3.8.11 The JU acknowledges the observation of the ECA and will address the issue in the next year's annual accounts.

3.8.15 As stated in last year's annual report, project extensions were granted due to the impact of the COVID-19 pandemic. In some cases, the beneficiaries had to revise insufficient technical reports/deliverables, or provide additional evidence of project results. Consequently, some interim and final payments of the JU's Horizon 2020 programme agenda had to be postponed but the programme's completion remains on target for the end of 2024. To mitigate as much as possible the delays in technical activities in 2021 and confirmed in 2022, the JU together with its private members implemented an action plan to implement €36.6 million in payments. This action plan, which is being implemented, was endorsed by the JU's governing board in April 2023 and revised in June 2023. Its success also depends on the ability of the projects to produce the expected quality outputs.

3.9. The European High Performance Computing (EuroHPC) Joint Undertaking

Introduction

3.9.1. The [European High Performance Computing \(EuroHPC\) JU](#), located in Luxembourg, was set up in October 2018 for a period until 31 December 2026⁷³. In July 2021, the Council adopted a new founding Regulation extending the lifetime and remits of the JU under the Multiannual Financial Framework (MFF) programme 2021-2027, for the period ending on 31 December 2033⁷⁴.

3.9.2. EuroHPC JU is a public-private partnership, enabling the pooling of resources from the EU, participating countries, and private members for the development and deployment of high-performance computing in Europe. Its members are the EU, represented by the Commission, the [Participating States](#), and three private members, represented by the European Technology Platform for High Performance Computing, the Big Data Value association, and the European Quantum Industry Consortium.

3.9.3. [Table 3.9.1](#) presents key figures for the JU.

Table 3.9.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	629.9	348.2	81 %
Available commitment budget (million euros) ⁽¹⁾	1 374.5	753.4	82 %
Total staff as at 31 December ⁽²⁾	23	15	53 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

3.9.4. The changes in the size of the JU's budget as shown in [Table 3.9.1](#), largely depend on the implementation phase of the multiannual research and innovation programmes, which

⁷³ [Council Regulation \(EU\) 2018/1488](#) establishing the European High Performance Computing JU.

⁷⁴ [Council Regulation \(EU\) 2021/1173](#) establishing the European High Performance Computing JU and repealing Regulation (EU) 2018/1488.

The European High Performance Computing (EuroHPC) Joint Undertaking

it is implementing. In 2022, the JU started with the implementation of the Horizon Europe and Digital Europe programmes. Therefore, the 2022 budget includes the commitment budget for the first calls and contracts planned for 2022 under these programmes, and the payment budget for the related pre-financing payments.

Information in support of the statement of assurance

3.9.5. Our audit approach, the basis for our opinion, the responsibilities of the EuroHPC JU management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page 141 forms an integral part of the opinion.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.9.6. We have audited:

- (a) the accounts of the EuroHPC JU, which comprise the financial statements⁷⁵ and the reports on the implementation of the budget⁷⁶ for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.9.7. In our opinion, the accounts of the EuroHPC JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the

⁷⁵ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

⁷⁶ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The European High Performance Computing (EuroHPC) Joint Undertaking

EuroHPC JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.9.8. In our opinion, the revenue underlying the accounts of the EuroHPC JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.9.9. In our opinion, the payments underlying the accounts of the EuroHPC JU for the year ended 31 December 2022 are legal and regular in all material respects.

3.9.10. The observations that follow do not call our opinion into question.

Observations on budgetary management

Insufficient information on members' contributions at programme level

3.9.11. In its 2022 annual accounts, the amounts of contributions recognised per member category (EU and private members) differ significantly among each other. This is because EU cash contributions are validated and recognised when paid to the JU at the beginning of the project implementation, but members' in-kind contributions are only recognised after validation of the costs incurred and declared for project implementation. The gap between the recognised amount of cash contributions on the one hand and in-kind contributions on the other hand, was addressed in a suboptimal way in the JU's 2022 annual accounts by not providing information on the JU members' legal commitments at year end, in terms of signed grant agreements and contracts.

3.9.12. In its 2022 annual accounts, the JU did not disclose important information regarding members' contributions at programme level, relevant for the complete

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communication of the JU's achievements at the year end. In particular, the JU did not compare the contributions received from each member category up to the year end under each programme with the legal contribution targets set for the respective programme.

3.9.13. In the following paragraphs, we provide an overview table on the members' contributions achievements per programme in 2022.

Implementation of the Horizon 2020 and Connecting Europe Facility 1 (CEF 1) programmes

3.9.14. *Table 3.9.2* presents an overview of the contribution targets of the JU's members for the Horizon 2020 and CEF 1 programmes compared to the level of members' contributions (cash and in-kind) recognised as validated and reported at the end of 2022.

Table 3.9.2 – Members' contributions for Horizon 2020 and CEF 1 (in € million)

Members	Members' contributions (as per Founding Regulation)				Members' contributions (as at 31.12.2022)				
	Operational activities	Administrative costs	Additional activities ⁽²⁾	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG CNECT) ⁽¹⁾	526.0	10.0	N/A	536.0	377.0	N/A	N/A	N/A	377.0
Participating States ⁽³⁾	476.0	10.0	N/A	486.0	124.8	0.0	38.0	N/A	162.8
Private members ⁽³⁾	420.0	2.0	N/A	422.0	0.0	0.0	11.0	N/A	11.0
Total	1 422.0	22.0	N/A	1 444.0	501.8	0.0	49.0	N/A	550.8

(1) The EU financial contributions include €100 million from the CEF1 programme.

(2) Additional activities are outside ECA's audit scope.

(3) The new founding regulation repealed the obligation for Participating States and private members to contribute to the administrative costs.

Source: ECA based on data from the JU and its founding regulation.

Private members will not achieve their minimum contribution target at the end of the programme implementation

3.9.15. To provide a complete picture of the JU's achievements for the Horizon 2020 and CEF 1 programmes, it is necessary to also consider the current level of the JU members' operational obligations in terms of signed grant agreements and contracts. At the end of 2022, the JU fully committed the maximum EU operational contribution of €526 million for signed grant agreements and contracts under the Horizon 2020 and CEF 1 programmes. Of this, around €266.3 million (or 50.6 %) remains to be paid in the coming years for projects yet to be completed.

3.9.16. At the end of 2022, the Participating States signed contractual commitments amounting to €447.3 million for the JU's Horizon 2020 and CEF 1 activities. In respect of these commitments, they declared financial contributions of €124.8 million to the JU for pre-exascale supercomputers procured by the JU itself, and €38 million of in-kind contributions

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related to the hosting entities' operating costs. In addition, the Participating States paid €48.2 million directly to the contractors of the petascale supercomputers that are jointly procured by the JU and the Participating States. The remaining difference between commitments and declared contributions arises from Participating States only recognising and reporting their costs to the JU when the Horizon 2020 projects they support have been completed.

3.9.17. At the end of 2022, however, the private members had only committed and reported €11 million of in-kind contributions for Horizon 2020 projects, which is considerably below the €420 million minimum target set out in the JU's founding Regulation to be achieved by private members by the end of the programme. We found that the JU's current financing arrangements for its grant actions only allow private members to provide in-kind contributions for one type of project (innovation projects with 30 % of the project costs). Consequently, the JU's arrangements for the financing of its grant actions did not result in the level of private members' in-kind contributions, defined in the JU's founding regulation for the Horizon 2020 programme.

Implementation of Horizon Europe, Digital Europe, and Connecting Europe Facility 2 (CEF 2) programmes

3.9.18. *Table 3.9.3* presents an overview of the contribution targets of the JU's members for the research programmes under the 2021-2027 MFF compared to the level of members' contributions (cash and in-kind) recognised at the end of 2022.

Table 3.9.3 – Members' contributions for Horizon Europe, Digital Europe and CEF 2 (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2022)			
	Operational activities	Administrative cost	Total	Cash	In-kind ⁽²⁾ validated	In-kind reported not validated	Total
EU (DG CNCT) ⁽¹⁾	2 989.3	92.0	3 081.3	338.0	N/A	N/A	338.0
Participating states	2 989.3	0.0	2 989.3	63.2	0.0	0.0	63.2
Private members	900.0	0.0	900.0	0.0	0.0	0.0	0.0
Total	6 878.6	92.0	6 970.6	401.2	0.0	0.0	401.2

(1) The EU financial contributions consist of (a) up to €900 million from the Horizon Europe programme; (b) up to €1 981.3 million from the Digital Europe programme; (c) up to €200 million from the CEF2 programme.

(2) Consists of in-kind contributions to operational activities (IKOP) only.

Source: ECA based on data from the JU and its founding regulation.

3.9.19. In July 2021, the Council adopted the new EuroHPC founding Regulation. According to this Regulation, the JU will have to implement projects amounting to €7 billion, of which €3 billion should be leveraged from the Participating States and €900 million from private members, in the form of cash and in-kind contributions. This represents a significant

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increase compared to the previous MFF programme of around €1.4 billion (see [Table 3.9.2](#)). As the JU's financing arrangements (see paragraph [3.9.17](#)) remain the same for the 2021-2027 MFF, there is a high risk that the JU will not achieve the private members' contribution targets under the new founding Regulation.

Lengthy acquisition process for supercomputers caused delays and low implementation of the 2022 operational budget

3.9.20. The JU's lengthy process for the acquisition of supercomputers significantly affected the implementation of the operational budget. The implementation rates for the operational commitment and payment appropriations were 79 % and 24 % respectively. The lower implementation rate for the operational commitment budget arose from the fact that the JU could not make an important global commitment related to an exa-scale computer hosting agreement, due to delays in the negotiation process with the Participating State and the hosting consortium. The main reasons for the low implementation rate of the operational payment budget were delays in completing the pre-exa-scale supercomputers that prevented interim payments related to the JU's operating grants; delays in the procurement for supercomputers that prevented the related pre-financing payments; the postponement of the CEF 2 call on Hyperconnectivity to 2023 due to the need of a pre-study; and delays in beneficiaries' cost claims for ongoing research activities.

Low implementation of the 2022 administrative budget

3.9.21. In 2022, the JU only implemented 45 % of its administrative commitment appropriations and 37 % of its administrative payment appropriations. The main reasons for the low implementation rates were that the JU could not achieve its ambitious recruitment plan for 2022, and did not consider sufficiently the reallocation of the significant amounts of unused payment appropriations of previous years, when planning its 2022 budget.

Observations on the management and control systems

3.9.22. For Horizon 2020 and Horizon Europe co-financed expenditure, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. For Horizon 2020 co-financed expenditure (clearings and final payments), the JU reported a representative error rate of 2.3 % and a residual error rate of 1.9 %⁷⁷. The JU's internal control system has not yet foreseen specific ex-post audits for CEF co-financed expenditure for the acquisition of

⁷⁷ EuroHPC JU 2022 Consolidated Annual Activity Report, chapter 4.1.

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supercomputers. For the Horizon Europe programme, ex-post audits have yet to be carried out, as the first interim payments are only expected in 2024.

3.9.23. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2022, at the level of the final beneficiaries⁷⁸. For one case, we found a non-quantifiable systemic weakness in the beneficiary's time-recording system.

Observations on other issues

The JU did not meet its 2022 recruitment target

3.9.24. To implement around €7 billion of funds under the new 2021-2027 MFF, the JU received at the end of 2021, 39 additional staff position to be recruited by 2023 (30 by the end of 2022 and another nine by the end of 2023). At the end of 2022, however, the JU had increased its staff from 15 to 23. Based on the recruitments launched in 2022, the JU recruited another 12 staff members by mid-2023. The recruitment procedures for the management positions of Head of strategy and governance and Head of administration and finance were only launched at the end of 2022 and during the first half of 2023 respectively.

3.9.25. The Commission's Internal Audit Service (IAS) carried out a limited review on the JU's human resource management in 2022. Regarding recruitment planning, the review reported that the JU lacked a documented analysis of resource needs, based on a robust ex-ante workload assessment to better prioritize the planned recruitments. In response, in December 2022, the JU developed an action plan, which the IAS considered to be adequate.

3.9.26. The JU did not meet its target of recruiting 30 new staff by the end of 2022, including two key management positions, and is still behind in meeting its recruitment objective of 39 new staff members by the end of 2023.

Follow-up of previous years' observations

3.9.27. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

⁷⁸ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2020	At the end of 2020, the JU had neither developed reliable procedures for the validation and certification of in-kind contributions, nor established an appropriate accounting procedure for the recognition of these in-kind contributions. This situation does not allow the JU to manage, monitor and report on the achievement of the minimum level of in-kind contributions.	In 2022, the JU did not prioritize the implementation of certification and accounting procedures for in-kind contributions, as they are only required at the time when the ongoing Horizon 2020 projects are completed.	Open
2	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, EuroHPC has not yet paid such contributions.</p> <p>In line with the Staff Regulations⁷⁹ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For EuroHPC, this</p>	EuroHPC paid the relevant employer's contributions to the EU pension scheme, for the year 2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.	Closed

⁷⁹ Article 83a.

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
		percentage share is 41.2 %. However, EuroHPC's Statutes state that the EU should cover 100 % of the administrative costs of the JU. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.	The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.	
3	2021	At the end of 2021, the private members had only reported €4.2 million of in-kind contributions. Consequently, there is a high risk that the JU will not meet the €420 million objective for private members' contributions as set out in the JU's founding Regulation, by the end of the implementation of the grant projects.	At the end of 2022, private members' contributions only increased to €11 million (see paragraphs 3.9.15 to 3.9.17).	Open
4	2021	Regarding the JU's 2021 budget available for operational projects, the implementation rates for operational (Title 3) commitment and payment appropriations were 2 % and 47 % respectively. The very low implementation rate for commitment appropriations is largely explained by the delayed start of the JU under the 2021-2027 MFF in July 2021 and the transfer by the Commission and Participating States of €700 million of funds to the JU in December 2021. Delays by Hosting Entities and supply issues for key components also contributed to the low implementation rate.	In 2022, the JU's lengthy process for the acquisition of supercomputers significantly affected the implementation of the operational budget (see paragraph 3.9.20).	Open
5	2020, 2021	As regards the administrative commitment and payment appropriations (Title 1 and 2), the JU did not consider	The situation continued in 2022 (see paragraph 3.9.21).	Open

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
		sufficiently in the planning of its administrative budget, the reallocation of the significant amounts of unused payment appropriations of previous years. Moreover, in respect of all budget titles, the reallocated budget appropriations from previous years were not used before the new appropriations of the year.		
6	2020, 2021	In 2020, the JU developed an action plan to implement the remaining actions of the 17 internal control principles of the Commission's internal control framework in 2021. However, due to the absence of key administrative staff, the JU had not yet approved several important internal control actions within the 2021 deadlines set in its action plan. These delays increased the JU's internal control risk for 2021.	The 2020 action plan was not yet completed at the end of 2022. In 2023, an Internal Control Officer was recruited and is overseeing this.	Open
7	2021	The additional resource needs for implementing the planned Central Management of Financial Contributions system was neither assessed by the Commission nor included in the JU's initial staff resource estimates for the implementation of the JU's new research and innovation agenda.	The actions are outside the remit of the JU.	Closed
8	2020, 2021	The precarious staff situation of the JU we observed in 2020 worsened. Under the new founding Regulation adopted in July 2021, the JU was significantly enlarged and will have to implement more than €7 billion of funds under the new 2021-2027 MFF. For this, it needs to recruit an additional 39 staff members by 2023. As the JU had only 15 staff members (four	By the end of 2022, the JU had recruited an additional eight staff members, but it did not meet its target of recruiting 30 new staff by the end of 2022. Therefore, it is	Open

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
		temporary staff and 11 contractual staff) at the end of 2021, it faces considerable human resource challenges in managing these new recruitments, in addition to the new administrative and operational processes yet to be established. Finally, the high proportion of contractual staff may result in a significant level of staff turnover in the near future, further increasing the pressure on the JU's precarious staff situation.	far behind in meeting its recruitment objective of 39 new staff members by the end of 2023.(see paragraphs 3.9.24 to 3.9.26). The proportion of contractual staff remained high with 70% at the end of 2022.	
9	2020, 2021	The JU had not yet launched the recruitment procedure for the head of administration and finance position. In addition, the JU had only one experienced project officer preparing and managing all infrastructure projects. and a second experienced officer managing the actions, related to the Horizon 2020 and Horizon Europe calls. The absence of key staff could adversely affect the JU's business continuity and the achievement of its objectives, given the requirement for highly qualified staff with very specific knowledge.	The recruitment procedures for the management positions of Head of strategy and governance and Head of administration and finance were only launched during at the end of 2022 and the first half of 2023 respectively (see paragraphs 3.9.24 to 3.9.26).	Open

Reply of the Joint Undertaking

3.9.11 EuroHPC JU acknowledges the observation of the ECA and will address the issue fully in next year's annual accounts.

3.9.21 EuroHPC JU would like to underline that the late adoption of its new founding regulation made achievement of its ambitious recruitment plan impossible.

3.9.23 EuroHPC JU has implemented the following mitigation actions. It has requested that in future, the beneficiary provides detailed evidence on human resource management and staff contracts for all projects when periodic reporting is due; the JU will recover in the final payment, the difference between reported efforts and documented efforts; and will perform additional checks if deemed necessary.



Joint Undertaking operating under EURATOM

3.10. The European Joint Undertaking for ITER and the Development of Fusion Energy (F4E)

Introduction

3.10.1. The European JU for the International Thermonuclear Experimental Reactor (ITER) and the Development of Fusion Energy (F4E) was set up in April 2007 for a period of 35 years⁸⁰. One of the main tasks of the JU is to provide the contribution of the European Atomic Energy Community (Euratom) to the ITER International Fusion Energy Organisation (ITER-IO), in charge of the implementation of the ITER project. While the main fusion facilities are at Cadarache in France, the JU is located in Barcelona.

3.10.2. Its founding members are Euratom, represented by the Commission, and the Euratom Member States.

3.10.3. [Table 3.10.1](#) presents key figures for the JU.

Table 3.10.1 – Key figures for the JU

	2022	2021	Variation
Available payment budget (million euros) ⁽¹⁾	844.0	764.8	10 %
Available commitment budget (million euros) ⁽¹⁾	981.2	1 069.9	-8 %
Total staff as at 31 December ⁽²⁾	436	441	-1 %

(1) Available budget includes unused appropriations of previous years, which the JU re-entered in the budget of the current year, assigned revenues and reallocations to the next year.

(2) Staff includes officials, temporary and contract agents and seconded national experts.

Source: Data provided by the JU.

Information in support of the statement of assurance

3.10.4. Our audit approach, the basis for our opinion, the responsibilities of the F4E management and of those charged with governance, and the auditor's responsibilities for the audit of the accounts and underlying transactions are described in section 3.1. The signature on page [141](#) forms an integral part of the opinion.

⁸⁰ Council Decision 2007/198/Euratom establishing the European JU for ITER and the Development of Fusion Energy and conferring advantages upon it.

The ECA's statement of assurance provided to the European Parliament and the Council – independent auditor's report

Opinion

3.10.5. We have audited:

- (a) the accounts of the F4E JU, which comprise the financial statements⁸¹ and the reports on the implementation of the budget⁸² for the financial year ended 31 December 2022, and
- (b) the legality and regularity of the transactions underlying those accounts, as required by Article 287 of the Treaty on the Functioning of the European Union (TFEU).

Reliability of the accounts

Opinion on the reliability of the accounts

3.10.6. In our opinion, the accounts of the F4E JU for the year ended 31 December 2022 present fairly, in all material respects, the financial position of the F4E JU as at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended, in accordance with its Financial Regulation and with accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector.

⁸¹ The financial statements comprise the balance sheet, the statement of financial performance, the cash flow statement, the statement of changes in net assets and a summary of significant accounting policies and other explanatory notes.

⁸² The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.10.7. In our opinion, the revenue underlying the accounts of the F4E JU for the year ended 31 December 2022 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.10.8. In our opinion, the payments underlying the accounts of the F4E JU for the year ended 31 December 2022 are legal and regular in all material respects.

Emphasis of matter

3.10.9. Without calling into question the opinion expressed in paragraphs [3.10.6](#) to [3.10.8](#), we draw attention to paragraphs [3.10.12](#) to [3.10.14](#), which state that the F4E disclose in the 2022 annual accounts its estimate of the total cost for completing its delivery obligations for the ITER project (“Estimate at Completion”), assessed at €19.1 billion (in 2022 values). However, the 2022 Estimate at Completion is still based on 2016 milestone and cost assumptions and will be subject to significant revision, once the new ITER project baseline and requirements are finalised, approved by the ITER Council, and formally communicated to F4E.

3.10.10. We draw attention to point d) of the “Introduction” of the annual accounts: “Impact of international situation”, which describes the impact of COVID-19 and the war of aggression against Ukraine on F4E’s operations.

3.10.11. The observations that follow do not call our opinion into question.

Observations on cost estimate at completion for ITER

3.10.12. On the basis of the current ITER baseline of November 2016, the JU’s estimate of the total cost of completing its delivery obligations for the ITER project (Estimate at Completion), includes the JU’s costs of the construction and operational phase until 2035, as well as the decommissioning and deactivation phase until 2042. At the end of 2022, the JU

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assessed this total cost at €19.1 billion (in 2022 values). This consists of the total payments made up to the end of 2022, amounting to €9.2 billion and the estimate of the future payments, assessed at €9.9 billion (in 2022 values).

3.10.13. In November 2022, the 31st ITER Council agreed on a baseline update. In its 32nd meeting of 21-22 June 2023, the Council commissioned the ITER Director-General to present a proposal for the updated ITER baseline for review and approval in 2024.

3.10.14. Due to the long-lasting process of updating the current ITER baseline of 2016, the long-term planning estimates, as disclosed in the 2022 annual accounts (including the Estimate at Completion), are still based on 2016 milestone and cost assumptions. These estimates, however, will be subject to significant revision, once the new ITER project baseline and requirements are finalised, approved by the ITER Council, and formally communicated to F4E.

Observations on budgetary management

Implementation of the 2022 operational budget

3.10.15. In 2022, F4E implemented 72 % of its commitment budget and 91 % of its payment budget. However, the JU reduced the operational payments budget by €92 million by means of an amendment budget, and in addition, transferred €9.5 million from its operational payments budget to the administrative budget (salary), to finance the F4E pension fund obligations to the Commission.

3.10.16. The low implementation rates resulted from the slowdown of operational activities at the level of both the ITER-IO and F4E, mainly due to the aftermath of the COVID-19 crisis, the war of aggression against Ukraine, and recent technical design issues concerning the current assembly phase of the ITER project.

Weaknesses in the implementation of the 2022 administrative budget

3.10.17. F4E's administrative budget is set up as non-differentiated appropriations. Consequently, administrative commitments based on administrative contracts and obligations for which payments that have not been made at the year end, may be carried over for payment to the following year.

3.10.18. At the end of 2022, the implementation rate was low with 63 % for the administrative expenditure budget (Title 2) of the year. At the same time, the cancellation rate of commitments carried over from the previous year was high with an average of 20 %.

Observations on the management and control systems

Instability at the level of senior management

3.10.19. The JU's senior management situation at the end of 2022 was in a significant state of transition. The departure of the F4E's director in June 2022 and the nomination of the F4E's head of Broader Approach Department as ITER-IO Director-General in September 2022, resulted in personnel changes for four of the JU's seven senior management positions. In 2022, three senior management positions (including the post of director) were filled ad interim by internal transfers, and another one was filled by staff recently recruited. Moreover, two senior managers (head of Commercial Department and head of ITER Program Department) retired by the end of August 2023. This situation presents an increased risk to the sound management and continuity of F4E, at a time when experienced senior management staff will be required to implement the new ITER baselines that will have an important impact on F4E's activities and are expected to be approved in 2024.

Weaknesses in the JU's risk management system

3.10.20. Despite extensive F4E risk management activities, the latest F4E's risk assessment did not reflect risks related to significant events, already identified and affecting the JU's activities during the second half of 2022. These included the changes to senior management, the slowdown of operational activities resulting in a lower budget implementation rate, delays in procurement, and the expected revision of the ITER baseline. This situation places in jeopardy, timely and appropriate decision-making by F4E's top managers and may negatively affect the JU's achievement of its project milestones.

Weaknesses in the JU's contract management

3.10.21. In 2013, F4E concluded a contract amounting to €500 million for the design, equipment, and installation of the ITER nuclear and non-nuclear buildings. In December 2020, F4E and ITER-IO, due to concerns related to the increasing cost of the nuclear design and equipment services and dissatisfaction with the contractor's progress and efficiency related to the remaining work on the non-nuclear buildings, launched a strategic development plan. This plan considered alternative procurement strategies, such as retendering of the equipment and the transfer of the remaining works to other contractors, and the assessment of the potential consequences vis-a-vis cost and delivery time-scheduling. In February 2021, the contractor submitted a cost claim totalling €150 million to F4E for the nuclear design and equipment services, and in September 2021 another cost claim of €30 million for the remaining works on the non-nuclear buildings. The JU hired external legal experts to analyse the possibility of alternative procurement strategies. Based on the experts' risk analysis and feedback, the JU's director settled with the contractor of the nuclear design and equipment services for an

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amount of €75 million, which was paid by the JU at the end of 2022. On the other hand, for the works on the non-nuclear buildings, F4E decided against a settlement agreement and the contractor opened a dispute.

3.10.22. Our analysis of the documentation on the contract's implementation revealed weaknesses in the JU's management of this contract. In particular, F4E did not correctly assess the impact of instructed contract changes nor of material non-compliances by the contractor in relation to the execution of the contract. This led to different interpretations and disagreement among the parties regarding the scope of works, timelines, and project requirements. Moreover, the legal experts concluded that due to the formulation of respective contract provisions, the JU could not terminate the contract to execute the de-scoped works itself or arrange for the works to be executed by other contractors. The lack of proper schedule management by the contractor and the absence of project records by F4E did not allow the JU to clearly establish the contractor's liabilities. These weaknesses seriously affected the achievement of the contract's objectives and, if not addressed, may also affect other operational activities of F4E, considering the significant modifications of ongoing complex contracts which may be required, resulting from the updated baseline of the ITER project.

Follow-up of previous years' observations

3.10.23. An overview of the corrective action taken in response to our observations from previous years is provided in the [Annex](#).

Annex – Follow-up of previous years' observations

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
1	2019	The JU is annually assessed by an external expert panel. The expert panel identified several problems and risks at senior management and corporate culture level. This situation, if remaining unsolved, could negatively affect the performance of the staff.	The observations relate to the F4E's 2019 (8 th) annual assessment report. In 2022, F4E had implemented the recommendations on F4E leadership challenge.	Closed

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
2	2019	Due to the restriction of the establishment plan in terms of statutory staff, the F4E increasingly uses contracted or insourced resources. In 2019, the level of these resources already reached around 62 % of the JU's statutory staff. This situation presents significant risks for the JU, concerning the retention of key competences, unclear accountability, possible judicial disputes, and lower staff efficiency due to decentralised management.	<p>In 2022, the JU created a working group to assess the high use of external resources with the objective to better plan and justify their need.</p> <p>In addition, according to the 2023 staff establishment plan, the JU's statutory staff was reinforced with ten additional temporary agent posts and the conversion of 15 contract agent posts into temporary agent posts. The risks identified will be addressed by the JU's External Service Provider project, planned to be finalised by the end of 2023. In 2023, the JU also initiated the establishment of a workforce planning function and a general revision of its human resource policy. Nevertheless, the type of project activities and the workload currently generated by the JU's activities require substantial External Service Provider support.</p>	Open

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Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
3	2021	<p>Since January 2016, JUs should pay a part of the employer's contributions to the EU pension scheme. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, F4E has not yet paid such contributions.</p> <p>In line with the Staff Regulations⁸³ and Commission's guidance, the annual employer contribution for each JU should be calculated as a percentage of the non-EU revenue related to the total revenue of the JU. For F4E, this percentage share is around 20 %. However, the respective provisions of the F4E's Statutes require that the total amount of membership contributions shall not exceed 10 % of the JU's annual administrative costs. The existence of these conflicting legal provisions risks the elaboration of diverse interpretations, with varying financial impact.</p>	<p>F4E paid the relevant employer's contributions to the EU pension scheme, for the period 2017-2022, as invoiced by the Commission. The calculation of the annual contribution was based on the Commission's guidance.</p> <p>The observation is therefore considered as closed. Further actions regarding the conflicting legal provisions are outside the remit of the JU.</p>	Closed

⁸³ Article 83a.

The European Joint Undertaking for ITER and the Development of Fusion Energy (F4E)

Sequence number	Year of the ECA's observation	The ECA's observation (summary)	Corrective action taken and / or other relevant developments (summary)	Status of the ECA's observation (Open / Closed)
4	2021	During 2020 and 2021, the JU has also been subject to the regular annual assessments by external experts and intensive internal audits covering most of its critical areas of its activities. The implementation of the remedial actions to address identified risks and respond to audits and assessments, resulted in an increase of the administrative burden, without evidence that the additional controls were efficient or had improved the system.	<p>In 2022, no new annual assessment of F4E was launched. At the end of 2022, F4E implemented 50 % of the recommendations the 9th and 25 % of the 10th annual assessments.</p> <p>As regards the IAS audits of F4E, the JU implemented all open recommendations in 2022, with the exception of two important ones on project management governance and methods that were implemented in the first quarter of 2023.</p>	Open

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5	2021	In November 2021, the staff of F4E went on strike. According to internal and external management assessments and several internal surveys, the main reasons for the deterioration of the working environment at the JU were shortcomings at senior management level (e.g., non-transparent and dysfunctional decision-taking and a lack of social dialogue). Furthermore, the disproportionate use of external staff resources increased challenges and risks for the working environment. The Commission declared that the 2022 annual assessment of F4E will exclusively focus on human resource management matters.	The 10th annual assessment report made two recommendations on the JU's human resource management. In 2022, the JU's Governing Board approved an action plan for their implementation. The JU fully implemented the first recommendation on the improved profile of the F4E director by June 2023 and plans to finish the implementation of the second recommendation on the reinforcement of staff positions by the end of 2023. In 2023, the JU's Joint Working Group finished its analysis of the JU's working environment and launched a follow-up of the psycho-social risk assessment survey.	Open

Reply of the Joint Undertaking

3.10.18 F4E wishes to note that the 20 % average cancellation rate of the administrative commitments carried over from 2021 to 2022 was mainly caused by the provisional commitments. The final implementation rate of the 2021 final administrative budget was 98.5 % at the end of 2022, similar to previous years.

3.10.19 It has to be noted that the acting heads of ITER-Delivery and Broader Approach Departments and the head of the Project Management Department are senior staff having the necessary skills, knowledge, and relevant experience to perform their duties. Nevertheless, as “acting” they might not have been fully able to address changes with a medium long-term perspective.

3.10.20 F4E is implementing a new framework to facilitate quick consolidation to the risk summary level and increase the visibility of the portfolio risk management activities, the first reporting of which has been presented to the F4E Governance levels in June/July 2023.

- Delays in procurements: the related risks are captured at the project/programme level risk registers rather than at the level of the procurement management function.
- The ITER-IO re-baselining exercise could affect in-kind delivery (F4E projects) or Euratom cash contribution to the ITER-IO:
 - In-kind delivery should be captured at the project level risk register. There are also possibilities for risk scope reduction (i.e., the ‘hot cell’).
 - EURATOM cash contribution to ITER-IO: The owner of this risk is EURATOM in its role as ITER Council member. This risk is also excluded from the “Estimate at Completion” presented to the F4E’s Governing Board.

3.10.22 F4E has already taken measures to ensure that the issues faced during the implementation of this contract are not repeated. First of all, this was one of the first FIDIC⁸⁴ contracts established at F4E, and this contract type is only used in the area of the buildings programme. When F4E became aware of the weaknesses in the area of delays management, it reinforced the contractual provisions of the new model contract. In addition, F4E is preparing a workshop with F4E staff involved in Legal, Commercial, Technical and Project Management to improve their awareness of the importance of proper schedule management in dealing with variations and claims of all stakeholders and to further improve the contract provisions, the

⁸⁴ FIDIC contracts are engineering agreements that govern construction projects. They are the leading contracts in global construction and are developed and published by the International Federation of Consulting Engineers (or in short, FIDIC in French), which is an international standards organisation for construction technology and consulting engineering.

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schedule management practices and processes. This action, which is due to be implemented by the end of 2023 is expected to further improve F4E's schedule management tools and to increase the resources allocated to this.

This Report was adopted by Chamber IV, headed by Mr Mihails KOZLOVS, Member of the Court of Auditors, in Luxembourg on 26 September 2023.

For the Court of Auditors



Tony Murphy
President

Abbreviations

BBI	The Bio-based Industries Joint Undertaking
CA	The Clean Aviation Joint Undertaking
CAS	Common Audit Service of the Commission's DG RTD
CBE	The Circular Bio-based Europe Joint Undertaking
CEF	Connecting Europe Facility
CIC	Common Implementation Centre of the Commission's DG RTD
Clean H2	The Clean Hydrogen Joint Undertaking
CS	The Clean Sky Joint Undertaking
DG CNECT	Directorate-General of the Commission for Communications Networks, Content and Technology
DG MOVE	Directorate-General of the Commission for Mobility and Transport
DG RTD	Directorate General of the Commission for Research and Innovation
ECCC	The European Cybersecurity Competence Centre
ECSEL	The Electronic Components and Systems Joint Undertaking
EU-Rail	The Europe's Rail Joint Undertaking
EURATOM	European Atomic Energy Community
EuroHPC	The European High-Performance Computing Joint Undertaking
EPPO	The European Public Prosecutor's Office
FP7	Seventh Framework Programme for Research and Technological Development (2007-2013)
F4E	The Fusion for Energy Joint Undertaking
FCH	The Fuel Cells and Hydrogen Joint Undertaking
GH	The Global Health Joint Undertaking (successor of the European and Developing Countries Clinical Trials Partnership 3)
IAS	Commission's Internal Audit Service
IKAA	In-kind contributions to Additional Activities
IKOP	In-kind contributions to Operational Activities
IHI	The Innovative Health Initiative Joint Undertaking
IMI	The Innovative Medicines Initiative Joint Undertaking
ISAs	The International Standards on Auditing of IFAC

ISSAIs	The International Standards of Supreme Audit Institutions of the International Organization of Supreme Audit Institutions (INTOSAI)
ITER	International Thermonuclear Experimental Reactor
ITER-IO	ITER International Fusion Energy Organisation
JU	Joint Undertaking
KDT	The Key Digital Technologies Joint Undertaking
MFF	Multiannual financial framework
OLAF	European Anti-Fraud Office
S2R	The Shift2Rail (European Rail Initiative) Joint Undertaking
SESAR	The Single European Sky Air Traffic Management Research Joint Undertaking
SNE	Seconded National Expert
SNS	The Smart Networks and Services Joint Undertaking
TFEU	Treaty on the Functioning of the European Union

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