

2021

Annual report on EU Joint Undertakings for the financial year 2021



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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 public-private partnership bodies set up in accordance with Article 187 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 2021 financial year. The report is structured as follows.

- Chapter 1 describes the JUs, including post-2021 developments, and the nature of our audit.
- Chapter 2 presents the overall results of the audit and an analysis of the JUs' human resources situation.
- Chapter 3 contains the statement of assurance for each of the nine JUs, 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 matters and observations not calling into question these opinions.

1.4. Overall, our audit of the JUs for the financial year ended 31 December 2021 confirms the positive results reported in previous years. Through the statements of assurance issued for each JU, we provide:

- unqualified (clean) audit opinions on the reliability of accounts for nine JUs; and

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

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

1.5. Nevertheless, we highlight areas of importance to the reader through “other matter” or “emphasis of matter” paragraphs, and flag up areas for improvement through the observations, without calling the audit opinions into question.

The EU Joint Undertakings

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

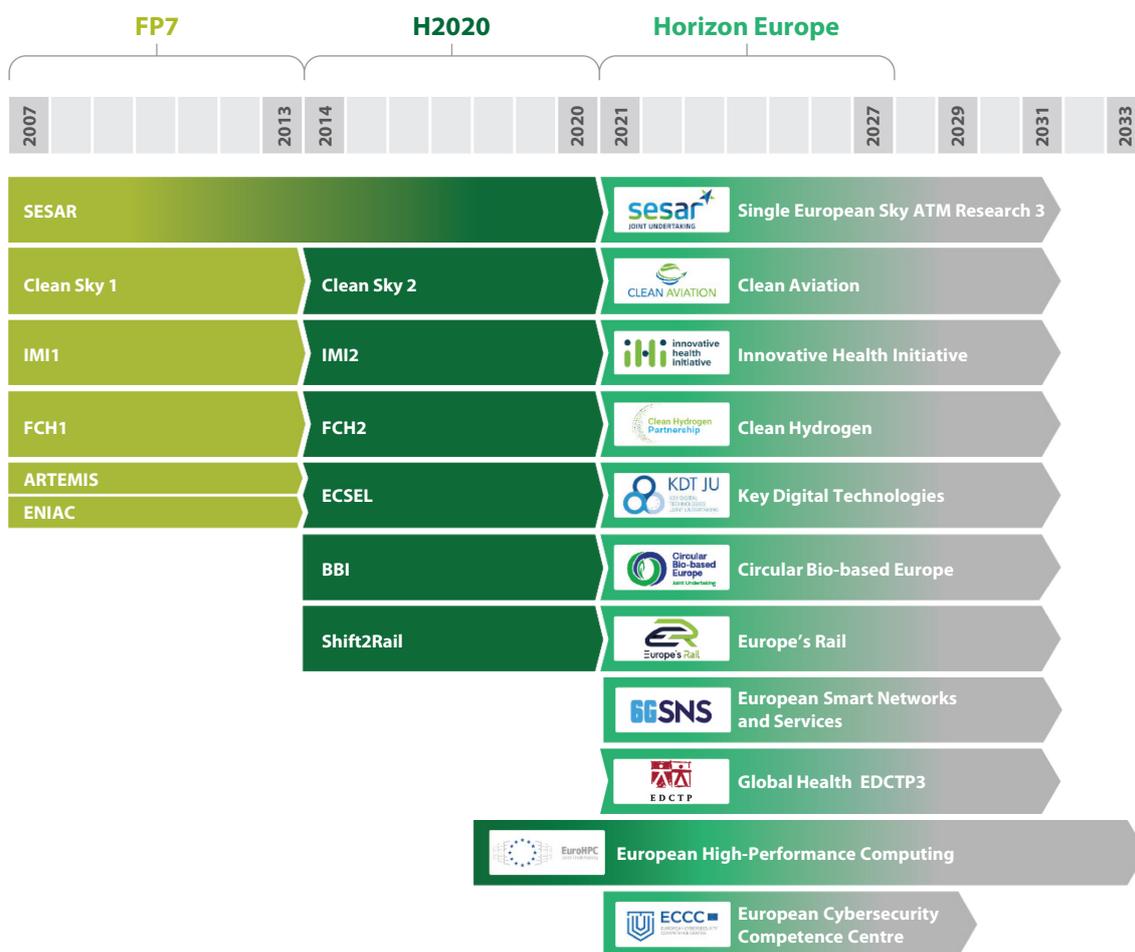
Joint Undertakings operating under multiannual EU research and innovation programmes

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 have separate legal personalities and adopt their own research and innovation agenda in their strategic area of research, 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 (H2020) programme of the 2014-2020 MFF, and the Horizon Europe (HE) and Digital Europe 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 the areas of transport, energy, health, bio-based industries, electronic components, supercomputing and network systems. They have been newly established on the basis of the Council Regulations represented 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, for the period ending on 31 December 2031². The general aim of the JUs under the Horizon Europe programme is to be more objective-driven and have more ambitious partnerships with the respective industrial sectors than under the previous programmes. The seven JUs already operating under the Horizon 2020 programme (SESAR, ECSEL, IMI2, Clean

² Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

Sky 2, FCH2, Shift2Rail, and BBI) are continuing under the Horizon Europe programme as new legal entities, with new names and revised remits, and two JUs have been newly established: the Smart Networks and Services (SNS) JU and the Global Health (GH) JU, 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 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. EuroHPC will receive additional funding from the Digital Europe programme of around €2 billion, as well as from the Connecting Europe Facility (CEF) of €200 million to support the acquisition, deployment, upgrading and operation of the infrastructures for supercomputers and quantum computers.

1.13. Finally, in February 2022, the Commission proposed to transform the Key Digital Technologies into the future Chips JU. It will have the additional remit to implement capacity building activities of the “Chips for Europe Initiative” under the 2021-2027 MFF. In this context, the JU will use budget from the Digital Europe programme to foster the development of innovative next-generation semiconductor technologies and reinforce the European chip-production capability⁵.

³ [Regulation \(EU\) 2021/887](#) of 20 May 2021 establishing the European Cybersecurity Industrial, Technology and Research Competence Centre and the Network of National Coordination Centres.

⁴ [Council Regulation \(EU\) 2021/1173](#) of 13 July 2021 establishing the European High Performance Computing JU and repealing Regulation (EU) 2018/1488.

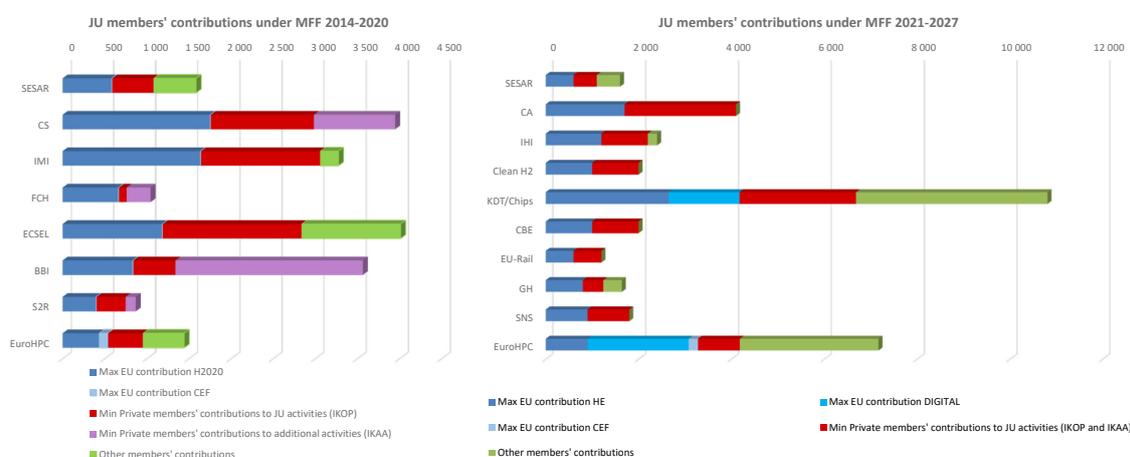
⁵ [Proposal for a Council regulation amending Regulation \(EU\) 2021/2085](#) establishing the JUs under Horizon Europe, as regards the Chips Joint Undertaking, [COM\(2022\) 47 final of 8.2.2022](#).

Contributions to the JUs operating under EU research and innovation programmes

1.14. All members contribute to the funding of the JUs' research and innovation activities. On the one hand, the Commission provides cash funds 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 provide in-kind contributions by implementing the JUs' research and innovation activities, in which they invest their own financial and human resources, assets and technologies. In some cases, Participating States or intergovernmental organisations also contribute financially to the JUs' activities. Both the EU and the JUs' private members provide cash contributions to finance the JUs' administrative costs, except for EuroHPC. In addition, legal entities or countries interested in supporting the objectives of a JU in its specific areas of research can apply to become associated members or contributing partners rather than full members.

1.15. *Figure 1.2* shows the members' contributions to the JUs under the previous 2014-2020 MFF and the current 2021-2027 MFF, as set out in the respective founding Regulations, including the transformation of KDT into the Chips JU as proposed by the Commission. Under the 2021-2027 MFF, EuroHPC and the proposed future Chips JU have the most significant increase in budget. EuroHPC and KDT receive financial contributions from Participating States, as will the future Chips JU.

Figure 1.2 – Members’ contributions (including cash) to JUs under EU research and innovation programmes (in € million)⁶



Source: ECA.

1.16. In principle, private members have to provide a minimum level of in-kind contributions in the form of “in-kind contributions to operational activities” (IKOP) and, in most cases, “in-kind contributions to additional activities” (IKAA). For more detailed information see [Box 2.1](#).

1.17. 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 €15.1 billion for co-financing the JUs’ research and innovation activities. The JUs implement €11.6 billion, representing around 12 % of the total Horizon Europe budget of €95.5 billion. On the other hand, EuroHPC and the proposed future Chips JU will also implement large capacity-building, deployment and investment projects related to the European Digital Single Market strategy under the Digital Europe Programme⁷. EuroHPC and the proposed future Chips JU will receive €3.4 billion in EU funds from the Digital Europe Programme – or 39 % of the programme’s total funding of €8.6 billion – to implement these activities.

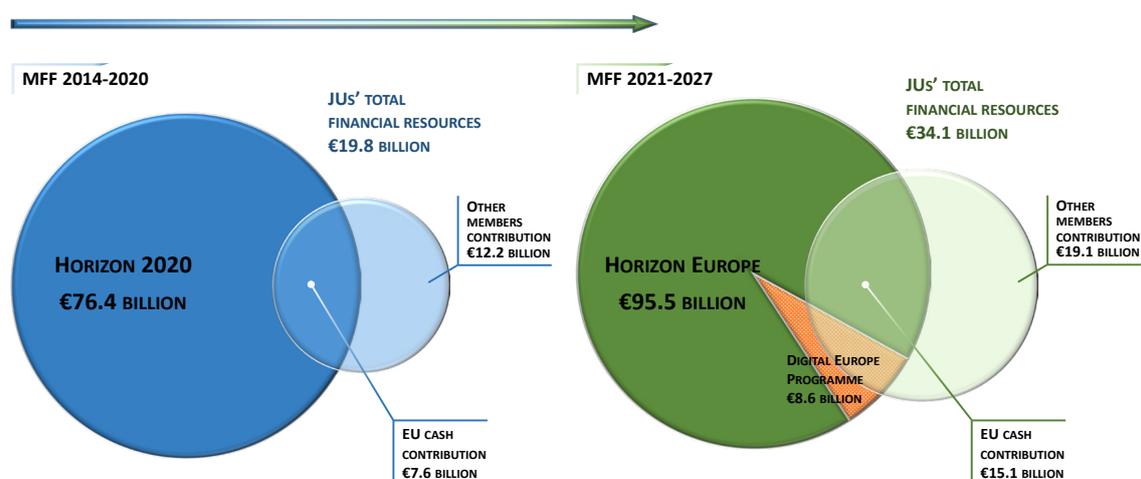
1.18. Under the previous 2014-2020 MFF (Horizon 2020 and Connecting Europe Facility), the EU funding of €7.6 billion for JUs is expected to leverage €12.2 billion (or 161 %) to achieve research and innovation projects to the value of about €19.8 billion in the areas assigned to JUs, including the Participating States’ and international

⁶ Figure 1.2 shows the amounts specified in the Single Basic Act, including the [amendment proposed by the Commission for the transformation of KDT into the future Chips JU](#). This amendment was not adopted at the time of the report.

⁷ [Regulation \(EU\) 2021/694](#) of 29 April 2021 establishing the Digital Europe Programme.

organisations' direct contributions (see [Table 2.1](#)). Under the new 2021-2027 MFF (Horizon Europe and Digital Europe), the EU funding of €15.1 billion for JUs is expected to leverage €19.1 billion (or 126 %) to achieve research and innovation projects to the value of about €34.2 billion in the areas assigned to JUs, including the Participating States' and international organisations' direct contributions (see [Figure 1.3](#)). The relative decrease of the leverage effect is mainly explained by the withdrawal of the UK from the EU.

Figure 1.3 – Total contributions to JUs and leverage of other members' contributions⁸



Source: ECA.

Governance models of JUs operating under EU research and innovation programmes

1.19. To ensure strong cooperation and coordination with their respective partners and stakeholders, JUs have an extensive governance structure which normally comprises the governing board, a scientific advisory body, a group of states' representatives, and stakeholder groups active in the research area of the JU.

1.20. Building upon the same legal structure, each JU has specific characteristics to deal with innovation and research in different sectors that are built around different markets. Most JUs follow a bipartite model, with the Commission and the private members from industry and research represented in the governing board and contributing to the JU's operational activities (CA, IHI, Clean H2, CBE, SNS and EU-Rail).

⁸ Figure 1.2 shows the amounts specified in the Single Basic Act, including the [amendment proposed by the Commission for the transformation of KDT into the future Chips JU](#). This amendment had not been adopted by the time of the report.

Four JUs follow the tripartite model, in which Participating States (KDT and EuroHPC) or leading intergovernmental organisations in their specific area (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

1.21. 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 and is hosted in Saint-Paul-lès-Durance (France), with the main fusion facilities being built at Cadarache (France).

1.22. The ITER project involves seven global partners: the EU (represented by the European Atomic Energy Community (Euratom))⁹, the United States, Russia, Japan, China, South Korea and India. The EU¹⁰ 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 EU providing 34 % of the operating costs¹¹. 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)¹².

1.23. 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 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 members¹³.

⁹ The members of Euratom are the EU Member States and the associated states Switzerland and the UK (until 2020).

¹⁰ The EU Member States and its associated states Switzerland and UK (until 2020).

¹¹ 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".

¹² Estimates are based on Commission Communication COM(2017) 319 and the related staff working paper SWD(2017) 232, table 4.

¹³ ITER.org.

1.24. 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 European Union'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 (around 80 %) and by the ITER host state, France (around 20 %).

1.25. 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 at current prices. The ITER host state (France) and the Euratom Member States (including Switzerland and the UK until 2020) are to contribute an additional €3.2 billion¹⁴.

1.26. 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 the parties could not conclude the Protocol, the UK is still not associated with the Euratom research and training programme and the F4E's ITER activities. Therefore, the UK is not currently a member of F4E.

JUs' payment budget and human resources in the 2021 financial year

1.27. In 2021, the total payments budget for all JUs amounted to €1.7 billion (2020: €2.3 billion), of which the F4E payment budget amounted to €0.8 billion (2020: €0.8 billion). The decrease in the payment budget in 2021 is explained by the fact that in 2021, the JUs mainly used the previous years' unused payment appropriations carried over to 2021 for the completion of the Horizon 2020 tasks, and have not yet received any payment budget for pre-financing projects under the new MFF programme. [Table 1.1](#) gives an overview of the JUs' specific innovation and research areas, their respective payment budgets and human resources for the 2021 financial year.

¹⁴ Estimates are based on Commission Communication COM(2017) 319 and the related staff working paper SWD(2017) 232, table 4.

Table 1.1 – JUs' payment budgets and human resources in 2021

Joint Undertaking		Research area	Final Budget 2021 (in € million)	Total staff end 2021 (TA, CA, SNE)	Final Budget 2020 (in € million)	Total staff end 2020 (TA, CA, SNE)	Research and Innovation programme with payments in 2021	Parent DG
SESAR	Single European Sky Air Traffic Management Research JU	Air traffic management	44.6	37	119.5	38	H2020, CEF (1)	DG MOVE
CA	Clean Aviation JU	Green aircraft	89.3	42	356.6	43	H2020	DG RTD
IHI	Innovative Health Initiative	Innovative health	207.1	50	241.6	53	FP7, H2020	DG RTD
Clean H2	Clean Hydrogen JU	Fuel cells and hydrogen	50	27	101.3	29	FP7, H2020	DG RTD
KDT	Key Digital Technologies	Electronic components and systems	155.8	29	212.5	29	FP7, H2020	DG CNECT
CBE	Circular Bio-based Europe JU	Circular Bio-based industries	127.2	22	191.2	23	H2020	DG RTD
EU-Rail	Europe's Rail JU	European railway traffic	42.7	19	75.8	24	H2020	DG MOVE
EuroHPC	European High-Performance Computing JU	Supercomputers and big data processing	207.5	15	181.5	11	H2020, CEF (1)	DG CNECT
F4E	Fusion for Energy (ITER)	Development and demonstration of fusion energy	764.6	441	816.4	435	Euratom	DG ENER

(1) Under the MFF 2013-2020, the EuroHPC received €100 million from the CEF fund and SESAR around €10 million.

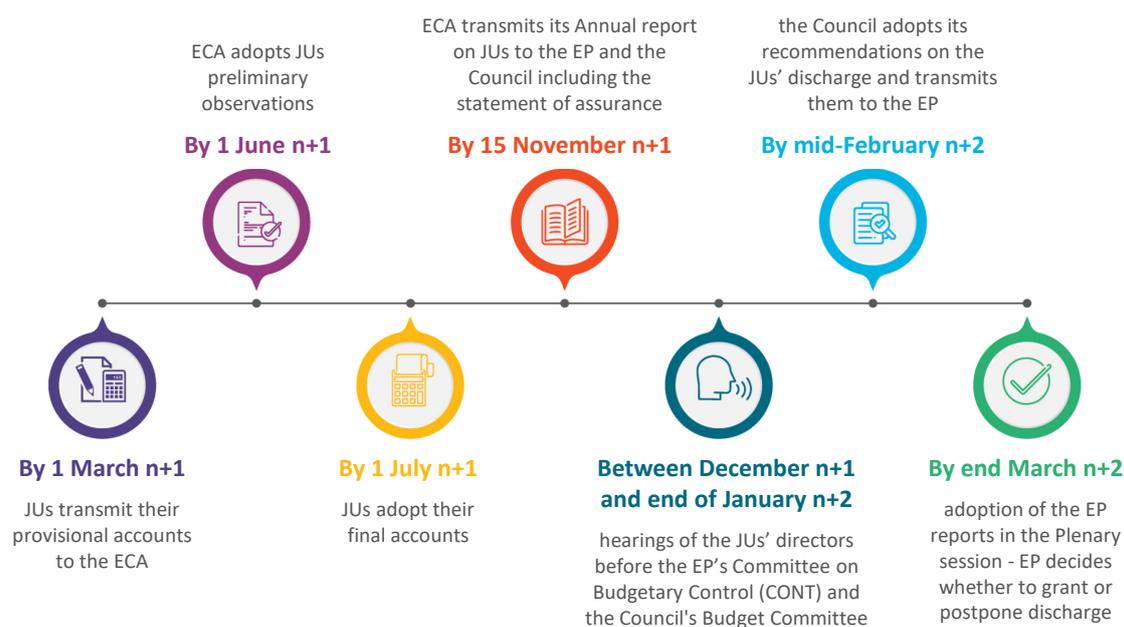
Source: ECA based on JU data.

1.28. At the end of 2021, JUs operating under the EU research and innovation programmes employed 234 staff (temporary and contract agents) and eight seconded national experts or SNEs (2020: 250 staff). F4E employed 439 staff (officials, temporary and contract agents) and two SNEs (2020: 435 staff).

Budgetary and discharge arrangements are harmonised for all JUs

1.29. The European Parliament and the Council are responsible for the JUs' annual budgetary and discharge procedures. The timeline of the discharge procedure is shown in *Figure 1.4*.

Figure 1.4 – Annual discharge procedure



Source: ECA.

Our audit

We issue a statement of assurance for each JU

1.30. 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 2021; and
- (b) the legality and regularity of the transactions underlying those accounts.

1.31. Based on the results of our audit, we provide the European Parliament and the Council with one statement of assurance per JU on the reliability of each JU's 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.

1.32. In line with Articles 70 (6) and 71 of the EU Financial Regulation, the audit of the reliability of the accounts for all JUs is outsourced to independent external audit firms. In accordance with the International Auditing Standards, we reviewed the quality of the work done by these external audit firms and obtained sufficient assurance that we could rely on their work in formulating our audit opinions on the reliability of the JUs' 2021 annual accounts.

Our audit approach is based on the assessment of key risks

1.33. Our audits are designed to address the key risks identified. The 2021 annual audit of the JUs' annual accounts and underlying transactions was carried out taking into account our risk assessment for 2021, which is briefly presented below.

Risk to the reliability of accounts was low to medium

1.34. Overall, we considered the risk to the reliability of the annual accounts to be low. The JUs' accounts are established by applying the accounting rules adopted by the Commission's accounting officer. These are based on internationally accepted accounting standards for the public sector. For EuroHPC, the risk was categorised as medium, due to the procedures regarding asset recognition and management not yet

having been established, and due to the requirements for the reporting, certification and validation of its members' in-kind contributions.

Risk to the legality and regularity of revenue was low overall

1.35. As the JUs' revenue in 2021 mainly consisted of financial contributions from the Commission's Horizon 2020 and Euratom budgets, the risk to the legality and regularity of revenue is low for all JUs. As laid down in the JUs' founding Regulations, budgets and resulting revenues are agreed with the budgetary authorities during the annual budget planning process.

Risk to the legality and regularity of administrative expenditure was low overall

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 JUs recruiting a higher number of staff during their first years of operation (EuroHPC), and where weaknesses in recruiting procedures had been found in the past (F4E).

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

1.37. For interim and final grant payments, the risk was assessed to be medium, as they are based on beneficiaries' cost declarations, which are generally complex. Moreover, for Horizon 2020 grant payments, certificates on financial statements (CFS) are only required from the beneficiary for final payments (trust principle). The CFS is a factual report produced by an independent auditor or Public Officer. Its purpose is to enable the Commission or a grant-awarding EU body to check whether costs declared in the financial statements are eligible. As the last call for proposals for Horizon 2020 activities had to be launched by December 2020, JUs had no risk to their grant awards in 2021. However, the risk was considered medium for EuroHPC, which continued to launch significant calls for proposals in 2021.

1.38. For contract expenditure and public procurement procedures, the risk was assessed as low for those JUs implementing research and innovation activities, given

the limited number of such procedures run by them. The risk was raised to medium for F4E and EuroHPC, due to the complex procurement procedures for high-value contracts.

Risk to budget management was low to medium

1.39. The risk was categorised as medium for EuroHPC because of weaknesses observed in the budget planning and monitoring process and the complexity and multiannual nature of its contracts and grant actions, and for F4E because of its complex and high-value contracts. For all other JUs, the risk was assessed as low.

Other risks

1.40. The COVID-19 pandemic has affected our work: in many cases, travel restrictions and remote working arrangements in JUs and the beneficiaries prevented us from carrying out on-the-spot checks, obtaining original documents and interviewing auditees' staff in person. We therefore carried out most of our work through desk reviews and remote interviews. While not carrying out on-the-spot checks may increase the risk of failing to detect an error, the evidence that we obtained from the auditees enabled us to complete our work and draw meaningful conclusions.

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 2021 financial year, we made one notification to OLAF/the EPPO.

Our audit approach for grant payments

1.42. In 2018 and 2019, we reviewed on a sample basis the ex post audit on JU grant payments carried out by DG RTD's Common Audit Service (CAS) and its contracted external auditors, which was followed up in 2020 and 2021. As reported in

the respective chapter of our annual reports¹⁵, these reviews revealed persisting audit quality weaknesses and methodological differences, understating the error rate for Horizon 2020 payments. Moreover, the residual error rate reported by the JUs in their respective annual activity reports is not directly comparable with the error rate published in our annual report on the Commission's research expenditure¹⁶.

1.43. Therefore, for the audit of the grant payments made by the eight JUs implementing Horizon 2020 and FP7 projects, we supplemented the assurance sought from 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 (MUS-based sample) from a population of all interim and final grant payments made by these JUs in 2021.

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

- (a) the JU's individual error rate based on the Commission's (CAS) ex post audit results for their 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 on grant payments; and
- (c) the findings related to the transactions of a specific JU within our substantive testing.

¹⁵ See [ECA annual report 2018](#), Chapter 5 (paragraphs 5.31 – 5.34), [ECA annual report 2019](#), Chapter 4 (paragraphs 4.28 and 4.29) and [ECA annual report 2020](#), Chapter 4 (paragraphs 4.23 – 4.30), which reported that in contrast to the ECA's calculation method, the CAS representative error percentage for each audited Horizon 2020 transaction is calculated based on the total amount of the cost declaration, rather than on the amount of the cost items sampled for detailed audits and re-performances.

¹⁶ In contrast to the error rate calculated by the ECA, the residual error rate calculated by the JUs (based on the ex post audit results and in line with the CAS's Horizon 2020 ex post audit strategy formula), includes the correction of all errors detected in audited payments, as well as the correction of systemic errors in the non-audited payments of audited beneficiaries ("extension").



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Chapter 2

Overview of audit results

Introduction

2.1. This chapter presents an overview of the results from our annual audit of the JUs for the 2021 financial year, including the work on a horizontal topic related to human resources issues, as well as other cross-JU audit work carried out by us during the same year. Based on our audit work, we suggest various action to be taken by the JUs.

The 2021 annual audit resulted in clean audit opinions for all Joint Undertakings

2.2. Overall, our audit of the annual accounts of the JUs for the financial year ended 31 December 2021 and the transactions underlying these accounts did not raise any important issues, in line with previous years.

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

2.3. 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 2021, 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

2.4. F4E maintains an estimate of the total costs of completing its delivery obligations for the ITER project, which it assessed in 2021 at €18.3 billion (in 2021 values). Our “emphasis of matter” paragraph draws attention to the fact that any changes in key assumptions concerning the estimate and the risk exposure¹⁷ could lead to significant cost increases or further delays in the implementation of the ITER project¹⁸. The following events may have a significant impact on the ITER deadlines and costs: the new baseline for the ITER project planned for the first quarter 2023 that will consider the impact of the COVID-19 pandemic, the late delivery of components, the sanctions on Russia (being a member of the ITER project); the ongoing approval of the French Nuclear Safety Authority for the assembly of the components of the tokamak pit; and the expected revision of the cost estimate for the Hot Cell Complex.

¹⁷ The risk exposure is the estimated impact value of the risk(s), multiplied by the probability of the risk(s) associated to a given activity.

¹⁸ An emphasis of matter is used to draw attention to a matter, which is not materially misstated in the accounts, but is of such importance that it is fundamental to the users’ understanding of the accounts.

Disclosures by the JUs regarding the war of aggression against Ukraine

2.5. In line with the Commission's accounting rule 19 on events occurring after the reporting date, the invasion of Ukraine, which started in February 2022, is a non-adjusting event for the purpose of the 2021 annual accounts. According to all JUs' annual accounts, based on the facts and circumstances at the time of preparation of these financial statements, in particular the evolving situation, the financial effect of the Russian war of aggression against Ukraine on the JUs cannot be reliably estimated.

2.6. However, we draw attention to the fact that Russia is a member of the ITER-IO, with the obligations to deliver several components for the ITER projects to the ITER assembly site in France (Cadarache) and to provide annual contributions to the ITER-IO. This presents a risk of delays and increased costs for the ITER project.

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

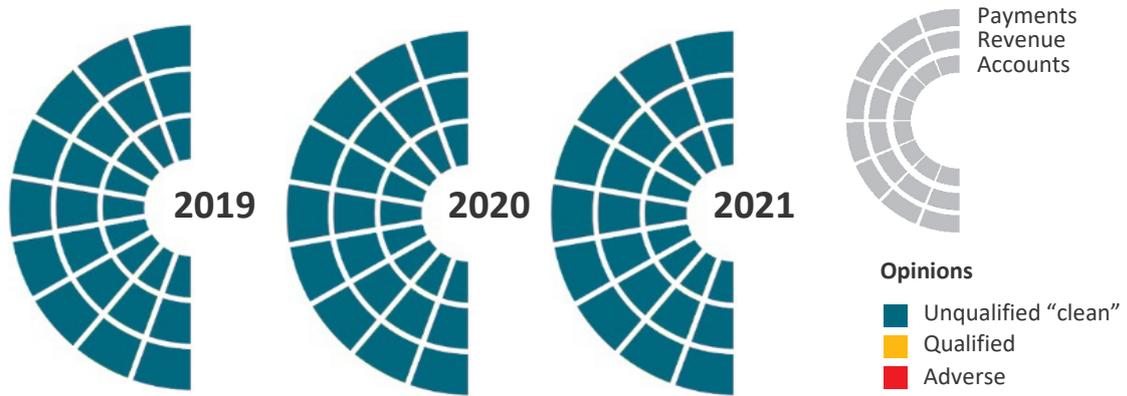
2.7. For all JUs, we issued *unqualified ("clean") audit opinions* on the legality and regularity of the revenue underlying the annual accounts for the year ended 31 December 2021. In our opinion, transactions were legal and regular in all material respects.

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

2.8. 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 2021. In our opinion, transactions were legal and regular in all material respects.

2.9. [Figure 2.1](#) gives an overview of the evolution of our annual audit opinions on the JUs' annual accounts, revenue and payments from 2019 to 2021.

Figure 2.1 – Evolution of the ECA’s opinions on JUs from 2019 to 2021



Source: ECA.

Our observations flag up several areas for improvement

2.10. Without calling our opinions into question, we make various observations to highlight matters for improvement in the areas of legality and regularity of transactions, budgetary and financial management, other members' in-kind contributions, the management and control system for payments, and human resources. A summary of these observations, which are detailed in [Chapter 3](#), is presented below.

Non-consideration of JUs' employer contributions to the EU pension scheme

2.11. As of January 2016, JUs which are only partly financed from the EU budget should pay to the EU pension scheme the part of the employer's contributions corresponding to the ratio of their non-EU subsidised revenues to their total revenues¹⁹. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, the JUs (and their predecessors) had not yet paid such contributions.

2.12. In line with the Commission's guidance to the JUs communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contributions to the EU pension scheme for each JU. This is calculated as a percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure²⁰. Cash contributions from Participating States, which are not channelled through the EU budget, are also considered as non-EU revenue. This guidance only takes account of

¹⁹ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

²⁰ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

the respective provisions of the Staff Regulations²¹ in determining the calculation method for JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act²² specifies that administrative costs should be shared equally, on an annual basis, between the EU and the other members of the JU; the respective provisions of EuroHPC's Statutes²³ state that the EU should cover 100 % of the administrative costs of the JU; and the respective provisions of F4E's Statutes²⁴ specify that the membership contributions to F4E's administrative costs (administrative revenue) may not exceed 10 % of these costs. The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the JUs' employer contributions, with varying financial impact.

Action 1

The JUs should, in accordance with Article 83a(2) of the Staff Regulations, pay their part of the employer contribution to the EU pension scheme when the Commission communicates the annual calculation.

In this respect, the JUs should engage with the Commission to seek further alignment of the provisions of the Staff Regulations and the JUs' individual founding Regulations concerning employers' contributions to the EU pension scheme when proposals to amend the relevant legislation are made.

No harmonised definition of "administrative costs" across JUs

2.13. The Single Basic Act specifies that "administrative costs" should be covered by financial contributions, divided equally on an annual basis between the EU and the other members²⁵. However, the absence of a definition of "administrative costs" across JUs resulted in the JUs applying their own established methods for calculating the members' financial contributions, thus affecting the amount of budget revenue that the JUs request from their members. Although JUs take, in principle, their final

²¹ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

²² Article 28 of Council Regulation (EU) 2021/2085.

²³ Recital 22 and Article 15 of Annex 1 to the Council Regulation (EU) 2021/1173.

²⁴ Article 12 of the Statutes of the F4E JU annexed to the F4E JU's Founding Regulation, and article 2 and 3 of Annex II to the Statutes of the F4E JU.

²⁵ Article 28 of Council Regulation (EU) 2021/2085.

payment budget of the year as a calculation basis for “administrative costs”, there is no harmonised approach for the classification of certain administrative cost expenditure categories, such as expenditure for consultations, studies, analysis, evaluations, and technical assistance.

Action 2

JUs operating under the Single Basic Act should establish common guidelines that harmonise the concept of administrative costs across JUs to be used as a basis for calculating annual members’ financial contributions.

While the JUs’ Horizon 2020 research and innovation agenda is fully committed, a significant number of projects will be finalised under the new MFF programming period

2.14. Under the Horizon 2020 programme, the EU makes cash contributions to the JUs, while private members provide two types of in-kind contributions to the JUs, by investing their own financial and human resources, assets, and technologies (see [Box 2.1](#)). Participating States make cash contributions directly to beneficiaries established in that Participating State.

Box 2.1

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 but the minimum amounts are not defined. 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.

2.15. JUs have no deadlines for implementing their projects funded under previous MFFs once the JU's life-span is renewed under subsequent MFFs. [Table 2.1](#) presents an overview of the members' contributions to the Horizon 2020 activities of these JUs at the end of 2021. By the end of 2021, the eighth year of the Horizon 2020 programme, these JUs had on average implemented 73 % of their members' contribution targets, including IKAA (or 64 % excluding IKAA). Consequently, the implementation of a significant number of Horizon 2020 projects will be finalised under the new 2021-2027 MFF.

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 31.12.2021)							
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 (f)	Other members' IKOP reported not validated (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	789.0	N/A	1 374.0	SESAR	536.2	447.8	87.1	N/A	1 071.0	N/A	78 %	
1 755.0	1 228.5	965.3	3 948.8	CS2 - CA	1 536.0	608.7	242.5	1 290.0	3 677.2	93 %	80 %	
1 638.0	1 638.0	N/A	3 276.0	IMIZ - IHI	838.0	638.2	251.0	N/A	1 727.2	N/A	53 %	
665.0	95.0	285.0	1 045.0	FCH2 - Clean H2	545.5	50.0	51.3	1 039.0	1 685.8	161 %	85 %	
1 185.0	2 827.5	N/A	4 012.5	ECSEL - KDT	1 058.1	322.8	968.2	N/A	2 349.1	N/A	59 %	
835.0	504.6	2 225.4	3 565.0	BBI - CBE	728.2	70.1	79.9	1 646.5	2 524.7	71 %	66 %	
398.0	350.0	120.0	868.0	S2R - EU-RAIL	339.2	189.6	96.4	208.8	834.0	96 %	84 %	
536.0	908.0	N/A	1 444.0	EuroHPC (3)	307.0	120.3	17.2	N/A	444.5	N/A	31 %	
7 597.0	8 340.6	3 595.7	19 533.2	Total	5 888.2	2 447.5	1 793.6	4 184.3	14 313.6	73 %	64 %	

(1) In-kind contributions and cash contributions from Participating States/international organisations to the JU's operational activities.

(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.

Source: ECA based on JUs' data.

2.16. [Table 2.1](#) shows that at the end of 2021, JUs had achieved the contribution targets set by their respective founding Regulations for Horizon 2020 activities to varying degrees. These variances can be partly accounted for by the different areas of research in which the JUs operate. For example, IHI's achievement of members' contribution targets is relatively low. However, this is due to the long project duration required by the nature of the JU's research in the area of innovative health, and the scale of global consortia implementing projects. Consequently, IHI still has to pay €84.3 million for ongoing FP7 projects in the coming years. For IHI, the increasing number of ongoing projects from multiple MFF programmes being implemented simultaneously presents the risk that administrative resources needed for the efficient management of these funds, may not be sufficient. For KDT, the lower achievement rate is not an issue, as its other members fully committed their IKOP by signing grant agreements, as shown in [Table 2.2](#).

2.17. As regards EuroHPC, at the end of 2021, the JU had already committed €180 million for the 50 % co-financing of Horizon 2020 research and innovation grants,

which is the minimum target in the JU's founding Regulation²⁶. The Participating States finance the remaining 50 % of the total project costs, and private members only contribute on top of the maximum eligible costs of the grant actions. By this date, however, the private members had only reported €4.2 million of in-kind contributions. Consequently, there is a high risk that the €420 million of private members' contributions, as set out in the JU's founding Regulation, will not be achieved by the end of the implementation of the grant projects. In addition, the JU still lacks reliable procedures for certifying and validating in-kind contributions, reported by its private members and Participating States. In addition, EuroHPC is the only JU that does not have a strategic implementation plan for the achievement of other members' contributions.

Action 3

EuroHPC should implement reliable procedures for the certification and validation of in-kind contributions, as well as a strategic implementation plan (road map) with realistic milestones and annual contribution targets for both Participating States and private members at programme level.

2.18. As shown in [Table 2.2](#), at the end of 2021, all JUs had already fully awarded or signed grant agreements for projects achieving 100 % of the maximum EU cash contribution available for the co-financing of their Horizon 2020 activities. In parallel, the other members of the JUs (private members, Participating States and international organisations) committed to provide in-kind contributions to these projects (IKOP) by signing the grant agreements. Some JUs (IHI, Clean H2, KDT, and EU-Rail) expect to leverage from their private members more than the minimum IKOP target set out in their respective founding Regulations or legal decisions. As all Horizon 2020 calls had been finished by the end of 2020, there is a high risk that CBE and EuroHPC will not achieve their private members' minimum IKOP targets by the end of the implementation of the Horizon 2020 grant projects.

²⁶ Article 4(2) of the Council Regulation (EU) 2018/1488.

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 awarded and/or signed (as at 31.12.2021)					Programme implementation rate
EU maximum cash	Other members' minimum IKOP and cash (1)	Total		EU co- financing committed	%	Other members' IKOP and cash (estimate)	%	Total	
555.8	789.0	1 344.8	SESAR	554.3	100 %	713.4	90 %	1 267.7	94 %
1 716.0	1 189.6	2 905.6	CS2 - CA	1 707.5	100 %	1 175.8	99 %	2 883.3	99 %
1 595.0	1 595.0	3 190.0	IMI2 - IHI	1 452.1	91 %	1 520.7	95 %	2 972.8	93 %
646.0	76.0	722.0	FCH2 - Clean H2	646.0	100 %	158.3	208 %	804.3	111 %
1 169.7	2 787.5	3 957.2	ECSEL - KDT (2)	1 169.7	100 %	3 548.8	127 %	4 718.5	119 %
815.8	475.3	1 291.1	BBI - CBE (3)	815.0	100 %	266.6	56 %	1 081.6	84 %
384.5	336.5	721.0	S2R - EU-RAIL	384.5	100 %	572.6	170 %	957.1	133 %
426.0	796.0	1 222.0	EuroHPC (2) (4)	425.6	100 %	451.5	57 %	877.1	72 %
7 308.8	8 044.9	15 353.7	Total	7 154.7	98 %	8 407.7	105 %	15 562.4	101 %

(1) Defined as minimum targets in the JU's founding regulations.

(2) Other members' contributions consist of the contributions of the Participating States and of private members.

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

(4) 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.

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

2.19. As in previous years, our 2021 audits at beneficiaries' premises confirmed systemic errors, mainly relating to personnel costs. As we reported in our previous annual reports²⁷ and special report No 28/2018, the methodology for calculating personnel costs has become more complex in some respects under Horizon 2020, which has increased the risk of errors. For the 2021 grant payments, the main sources of errors found were:

- sub-contracting costs incorrectly declared as direct personnel costs;
- incorrect calculation of hourly rates and use of planned cost data for unit cost rates;
- consideration of hours worked outside of the reporting period; and

²⁷ 2017 annual report, paragraph 5.34, 2018 annual report, paragraph 5.16, 2019 annual report, paragraph 4.11, 2020 annual report, paragraph 4.13, and 2021 annual report, paragraphs 4.12 to 4.16.

- o direct personnel costs declared for a person who was neither employed by the beneficiary nor directly contracted for the project.

2.20. One of the JUs' strategies for boosting European research is to increase private-sector participation, especially by SMEs and new beneficiaries. However, our direct audit of grant payments at beneficiaries' premises showed that of the 10 private-sector beneficiaries with quantifiable errors, six SMEs accounted for around 90 % of the total errors found.

2.21. The Commission provides a tool (the 'Personnel Costs Wizard'), that supports participants' reporting of personnel costs, and regularly promotes its use.

Action 4

JUs should strengthen their internal control systems to address the increased risk regarding SMEs and new beneficiaries, and strongly encourage the use of the Personnel Costs Wizard by certain categories of beneficiaries that are more prone to errors, such as SMEs and new beneficiaries.

JUs follow up on our previous years' observations in most respects

2.22. In most cases, the JUs had taken corrective action to follow up on the observations in our specific annual reports from previous years, details of which can be found in the annexes to our opinions in Chapter 3.

2.23. *Box 2.2* outlines our approach used for the assessment of the follow-up status of previous years' observations.

Box 2.2

Follow-up approach for previous years' observations

Completed

The JU has introduced reasonable improvements in following up our observation.

Ongoing

The JU has started to introduce reasonable improvements following our observation. However, the process is not yet completed, or the implemented improvements only partly respond to our observation.

Outstanding

The JU has not responded to our observation, or its corrective actions are significantly inadequate.

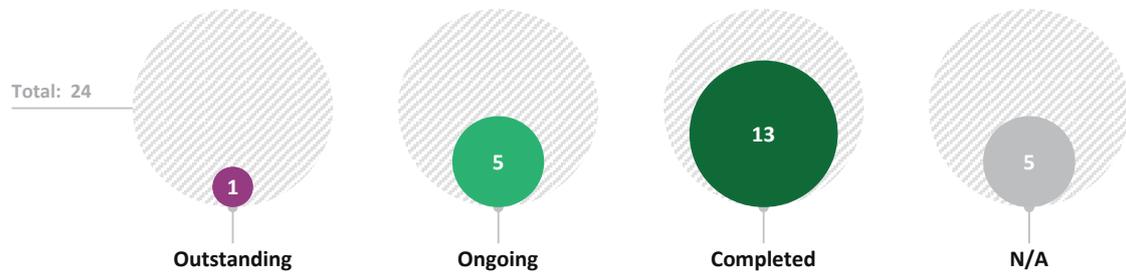
N/A

The observation is no longer applicable due to its replacement by a new observation that included additional or corrective elements, or the related JU's activities or legal context have changed. Also applicable when the cost of addressing the issue outweighs the benefits.

2.24. *Figure 2.2* shows that for the 24 observations not sufficiently addressed at the end of 2020, corrective action had been taken in 2021, so that 18 observations

(75 %) were completed or not applicable, while 6 observations (25 %) remained ongoing or not yet addressed at the end of 2021²⁸.

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



Source: ECA.

²⁸ Note: For SESAR, IHI, Clean H2, KDT, and EU-Rail, the follow-up of all previous years' observations were completed because of the JUs' corrective actions taken during 2021.

Joint Undertakings face human resources challenges

Methodology of our horizontal review

2.25. In 2021, we analysed the human resources situation at the JUs operating under the Horizon 2020 programme. This included the use of interim (agency) staff and other staff-related service contracts, as well as the Commission's staff planning for the new JUs established under the 2021-2027 MFF. Based on the results, we drew conclusions on related consequences and risks. In respect of F4E, we performed a separate assessment of its human resources situation, the results of which are presented at the end of this chapter.

2.26. We based our analysis on data from the Commission's financial and e-grant system, and the JUs' annual management reports. The data was complemented by interviews with staff at the JUs and the Commission, as well as an analysis of documents and staff-related data provided by them. For the purpose of our analysis, we also compared the situation in the JUs with that of the executive agencies, in particular the European Research Executive Agency (REA), which engages in similar programmes as the JUs.

2.27. Based on the data and documents we collected from the JUs related to the period from 2018 to 2021, we calculated some basic key indicators that provide useful information about the JUs' staff situation. We complemented the results with previous years' observations which were relevant in this context.

The human resources situation at JUs was difficult in the period from 2018 to 2021

2.28. In line with internal control principle 4²⁹, JUs should demonstrate a commitment to attract, develop, and retain competent individuals to fulfil their objectives. In this context, the management of each JU should define competences necessary to support the achievement of objectives and regularly evaluate them across the JU, taking action to address shortcomings where necessary. Deputising

²⁹ Internal Control Framework of the Commission.

arrangements for operational activities and financial transactions should be in place to ensure continuity of operations.

2.29. During the reference period, JUs assessed their risk related to the human resources as medium to high. This was mainly justified by the risk that sufficient competent resources might not be available when needed, due to the increasing workload, relatively high staff turnover rates, and dependence on the expert knowledge of a few staff members.

2.30. During the period from 2018 to 2021, the average annual staff turnover rate for all JUs (excluding F4E) ranged from 10 to 12 %. CBE and EU-Rail faced the highest individual average turnover rates during this period (15 % and 19 % respectively). In comparison, the turnover rate of REA in 2021 was 6 %. According to the JUs, this was mainly due to the more competitive employment conditions and career opportunities available at the Commission and the executive agencies. For example, due to their limited life span, JUs can only offer an indefinite employment contract to staff after seven years, compared with three years for other EU bodies (such as agencies). In addition, temporary and contractual staff employed at JUs may also apply for vacancies published by other EU bodies within the framework of interagency mobility.

2.31. During the period, the average annual rate of interim staff for all JUs (excluding F4E) remained high, at around 11 % of statutory staff. It was particularly high at CA, CBE and EU-Rail (13 %, 19 % and 18 % respectively). In comparison, in 2021, REA's interim agents accounted for just 1 % of statutory staff. The constant high level of interim staff at JUs was in most cases caused by a high turn-over rate and the need to replace statutory staff on long-term sick leave or during recruitment processes (CBE, EU-Rail). This may present significant risks for the JUs, concerning the retention of key competencies, unclear accountability, possible judicial disputes, and lower staff efficiency that could ultimately negatively affect the JUs' overall performance.

2.32. An additional workload driver for JUs is the relatively large number of beneficiaries in the consortia implementing JU projects, requiring from JUs a high volume of internal controls on cost claims presented by those consortia. Accordingly, during the period, an ongoing project was implemented by 21 beneficiaries on average across the JUs (CA and KDT had 42 and 40 beneficiaries respectively), compared to an average of only six beneficiaries implementing ongoing REA projects in 2021.

EuroHPC still lacked key staff at the end of 2021

2.33. As regards EuroHPC, in 2020, we reported that the JU had a precarious staff situation, and in particular, a need to recruit key administrative staff³⁰. At the end of 2021, however, the JU had not launched a recruitment procedure for the head of administration and finance position, and had not been able to complete the recruitment of seven administrative top priority key staff due to the delayed approval of the JU's new founding Regulation in July. In addition, the JU had only two experienced project officers preparing and managing both large infrastructure projects and research actions under the previous and current MFFs. The absence of key staff could adversely affect business continuity and the achievement of the JU's objectives, particularly given the highly technical nature of its projects and the requirement for highly qualified staff with very specific knowledge.

Action 5

EuroHPC needs to fill key staff positions required to ensure both its financial and internal control management, as well as business continuity and the achievement of its main operational objectives.

JUs could have been better included in the human resources planning process for 2021-2027 MFF

2.34. JUs are autonomous and responsible for their own recruitment procedures, including staff needs and competences. Their executive directors are required to establish a programme office under their responsibility for the implementation of all support tasks deriving from the JUs' founding Regulations. It should be composed of the staff of the JU and should, in particular, provide support for an appropriate accounting system, manage the implementation of the JU's work programmes, and provide timely information and support to the JU's members and advisory groups³¹.

2.35. JUs reported that their resource planning for the 2021-2027 MFF had been carried out exclusively by the Commission, consisting of the relevant parent Directorate-General (DG) of the JU and the DG BUDG. The results of this exercise had determined staffing levels for each JU, set out in the legal financial statements (LFSs)

³⁰ ECA 2020 annual report on EU Joint Undertakings, paragraph 3.9.17.

³¹ Article 19 of Council Regulation (EU) 2021/2085, article 9 of Council Regulation (EU) 2021/1173.

included in the Commission's proposal for the relevant Council Regulation³². In this context, it is also important to note that the Commission has to operate with stable staffing assumptions for the EU bodies. In addition, the Council had scrutinised the level of temporary and contract agents of JUs planned in the respective Commission proposals before it adopted the new founding Regulations for JUs under the 2021-2027 MFF.

2.36. These LFSs serve as a reference point for the discussion on the staff numbers in the annual staff establishment plan for the whole programme period. They set the maximum annual staff number (FTE headcount) for each staff category (temporary agents, contractual agents, seconded national experts) and also the respective function groups and grades. Most JUs reported that after the internal budget and resource planning process, their management had not been included in the negotiation process between the parent DG and DG BUDG. They also reported that they were insufficiently informed about the Commission's productivity model, used to determine the human resources for implementing their programmes under the new MFF, and about the basis for capping staff numbers, despite an increased budget to be implemented. As JUs are autonomous and responsible for the implementation of their work programmes, we consider that they could have been better included in the human resources planning process for the 2021-2027 MFF.

JUs lack common tools and guidance on human resources estimates

2.37. The executive director of each JU should ensure the sustainable and efficient management of the entity and the efficient implementation of its work programme, and should prepare and submit the draft annual budget and the staff establishment plan to the governing board for adoption³³.

2.38. Currently, JUs do not have a tool to record time spent on each activity. Therefore, the number of staff to be allocated to an activity each year is based on estimates rather than actual time spent on each activity during the year. The absence of a time-recording tool raises the risk that the estimates of human resource needs

³² COM(2021) 87 final of 23.2.2021 and COM(2020) 569 final of 18.9.2020.

³³ Article 19 of Council Regulation (EU) 2021/2085, article 9 of Council Regulation (EU) 2021/1173.

may not be sufficiently reliable, leading to an inefficient allocation of resources among activities within the organisation.

Action 6

JUs should implement a time-recording system to obtain objective data on staff time spent on each activity.

2.39. Most of the JUs performed a resource needs assessment for the new MFF (often with the help of an external expert) and shared it with their parent DG. However, the assessments lacked a formalised and common methodology to estimate the staff needs (including essential competences) of each unit. Such a methodology would support JUs in developing objective and well-designed workload indicators (drivers) to achieve an optimal resource allocation within the organisation. In the absence of such a methodology, JUs will continue to apply different processes that risk being perceived as incomplete or biased.

Action 7

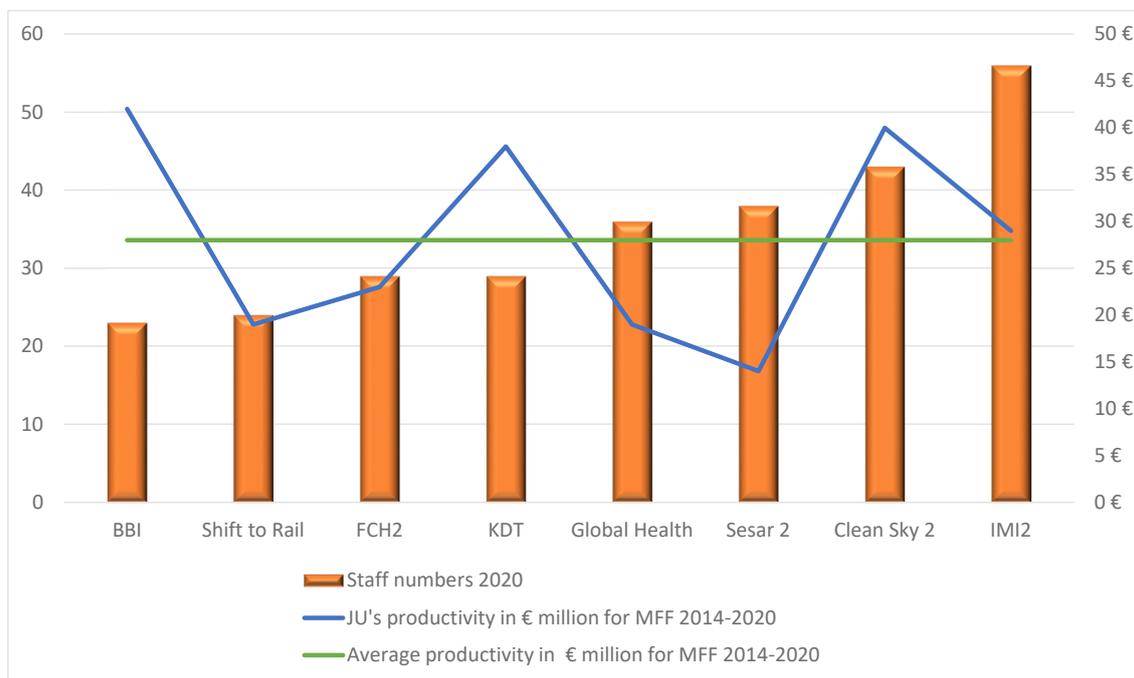
JUs should develop a formalised model or guidance on how to estimate staff needs (including essential competences) for each activity and unit, with the objective of optimising the use of staff resources.

Shortcomings in the human resources planning model used for JUs regarding the 2021-2027 MFF

The Commission planned JUs' resources without prior information on their additional tasks

2.40. As shown in [Figure 2.3](#), the JUs operating under the Horizon 2020 programme were expected to achieve an average productivity of €28 million of commitment budget, to be managed by one full-time equivalent (FTE) staff member. This productivity objective of each JU was calculated by dividing the EU's financial contribution to the JU, as set out in the JUs' respective founding Regulations (at current prices of commitments) by the number of staff members at the JU in 2020, expressed in FTE. For the JUs to be established under the 2021-2027 MFF, the Commission's objective was to maintain at least a similar average productivity level as under the previous Horizon 2020 programme by the end of the 2021-2027 MFF.

Figure 2.3 – Human resources and productivity objectives for JUs under Horizon 2020

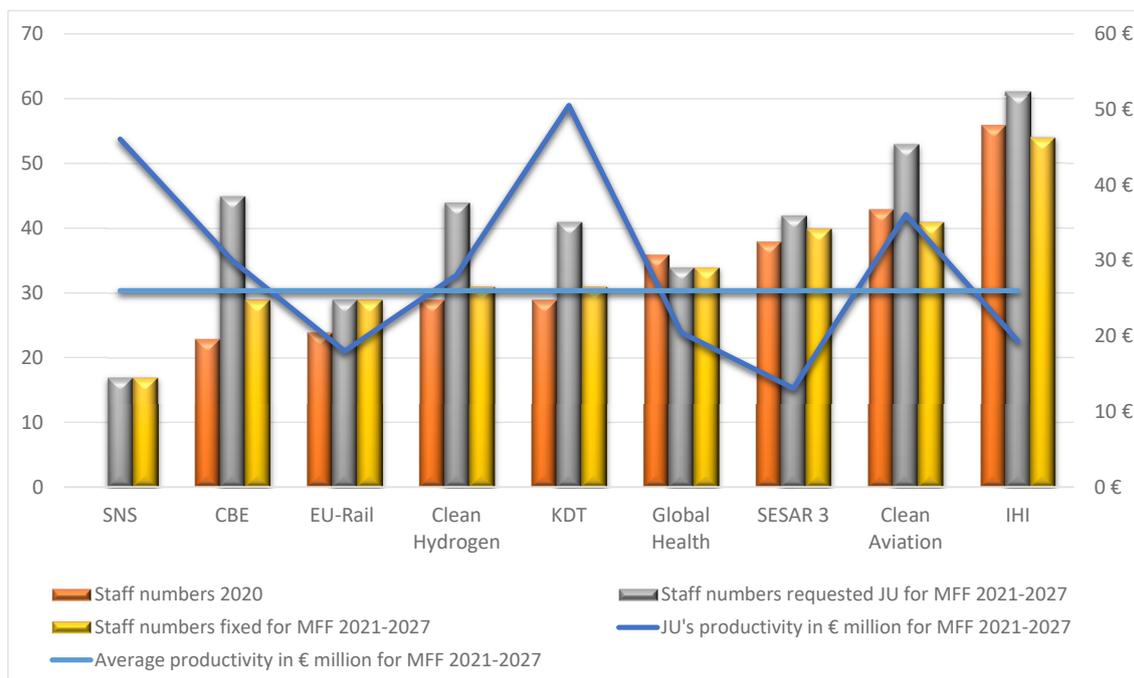


Source: ECA based on Commission data. https://assystii.eca.eu/audits/21-CH4-JUS/_layouts/15/DocIdRedir.aspx?ID=X6PCQ55VVETM-2035505568-15920

2.41. The Commission's human resources planning for the new JUs to be established under the Horizon Europe programme was based on a similar productivity model, where the productivity objective for each JU was calculated by dividing the EU financial contribution to the JU (as set out in the Single Basic Act, in constant 2020 prices) by the final JU staff number in FTE (see [Figure 2.4](#)). The Commission predefined an average productivity for all the JUs which had a predecessor³⁴ of €26 million, to be managed by one FTE. This objective should be increased to €28 million by reducing the staffing level by a further 10 FTE by the end of 2023. The actual level of the reduction, however, should follow an assessment of the effectiveness of the JUs' operations. To achieve this objective and to manage the increased EU budget under the new MFF, the Commission set the limit to the number of statutory staff members requested by the JUs at the 2020 staffing level. As a result, the lower productivity of some JUs (Sesar, EU-Rail, and IHI) was offset by the higher productivity levels of other JUs (KDT, SNS, and CA). Moreover, in the case of KDT and EuroHPC, the productivity model only included the EU's financial contributions, whereas the revenues to be managed by these JUs included both EU and national contributions from Participating States.

³⁴ Including Global Health JU.

Figure 2.4 – Human resources estimates and productivity objectives for JUs under the Single Basic Act



Source: ECA based on Commission data.

2.42. We noted, however, that the legal financial statements (containing the establishment plans) were agreed by the Commission before the adoption of the Commission's Strategic Research and Innovation Agenda and the Single Basic Act, which entrusted additional administrative and operational tasks to the JUs. These tasks include the management of new committees, the expanded role of the advisory bodies, the new process for managing in-kind contributions to additional activities, increased reporting requirements, and new operational activities. Therefore, at the time of the planning process, the main difficulty in assessing the staffing needs was the uncertainty concerning high-level research objectives and the additional administrative and operational tasks of the future JUs.

2.43. As the planning of the JUs' human resources was not based on the necessary information needed to assess their workload level, there is a risk that the planned human resources may be not sufficient for the JUs to fulfil all the tasks assigned to them.

EuroHPC was omitted from the productivity model

2.44. When planning the human resources for the new JUs under the 2021-2027 MFF, the Commission did not include EuroHPC (for which, given the political priorities,

the Commission's proposal for the founding Regulation had been adopted earlier) in the productivity model.

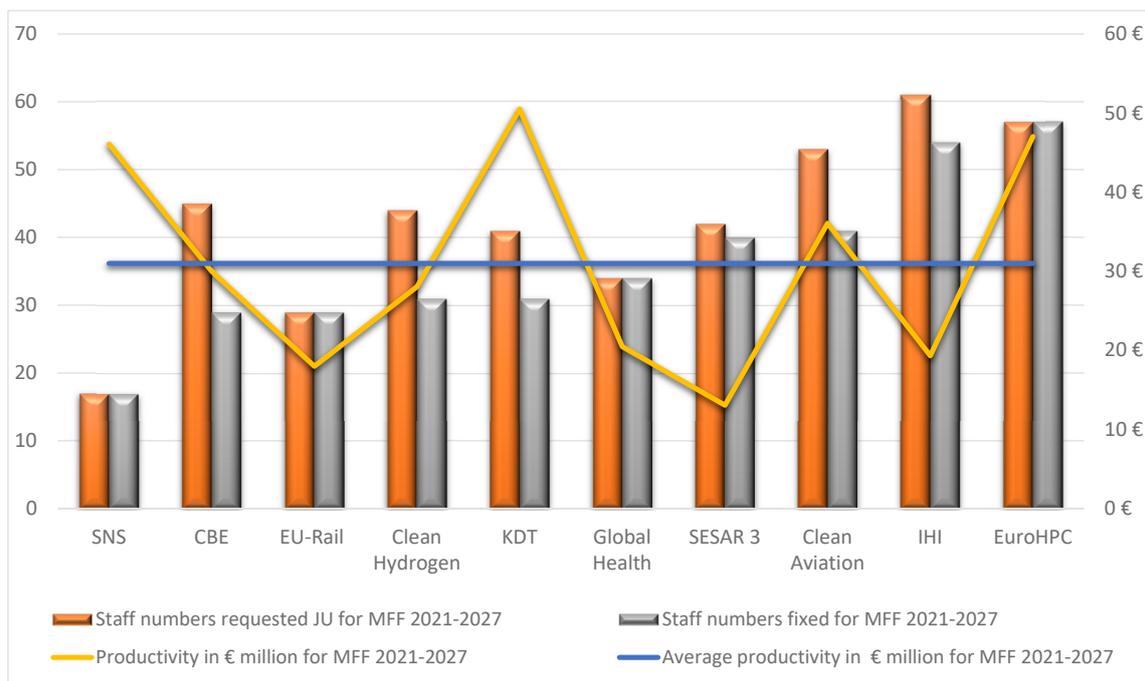
2.45. With a view to regaining a leading position in innovative high-performance computing and quantum computing technologies, EuroHPC was significantly enlarged under the 2021-2027 MFF. Under the new founding Regulation adopted in July 2021, the JU will have to implement more than €7 billion in funds. For this, it needs to recruit an additional 39 staff members to achieve its planned level of 54 statutory staff by the end of 2023³⁵. Due to the delayed adoption of the new founding Regulation, the JU only launched the necessary recruitment processes for seven top priority posts late in 2021, and could not increase its staff during 2021. As the JU had only 15 staff members (four temporary and 11 contractual staff members) at the end of 2021, it may face human resource challenges in managing these new recruitments, in addition to the new administrative and operational processes yet to be established.

2.46. As shown in [Figure 2.5](#), this important JU has a very high productivity level (€47 million per FTE), which increased the average productivity of all JUs from €26 million to €31 million on average, per FTE. Consequently, the actual average productivity level of all JUs operating under the 2021-2027 MFF is similar to the average productivity level of the executive agencies of €33 million, and not below, as was assessed at the time of the planning.

2.47. Although all JUs implement comparably complex activities, their productivity objectives range from €13 million to €51 million (see [Figure 2.5](#)), being lowest for SESAR and EU-Rail but highest for KDT, EuroHPC, and SNS.

³⁵ COM(2020) 569 final of 18.9.2020.

Figure 2.5 – Human resources estimates and productivity objectives for JUs under the 2021-2027 MFF



Source: ECA based on Commission data.

Size and specific workload drivers were not sufficiently considered in the resource planning

2.48. Contrary to other EU bodies such as executive agencies, one of the main missions of JUs is to secure their private members' commitment to their research and innovation activities. This commitment should help to create EU-wide partnerships with industry and research partners that accelerate the translation of scientific knowledge into marketable breakthrough innovations, foster the development of innovations within a strategic vision that is shared by the members, respond to social challenges in Europe which are currently insufficiently served by industry, and develop synergies with other partnerships and national programmes.

2.49. In principle, JUs are rather small organisations, and have fewer possibilities than executive agencies to increase their productivity through economies of scale. On the other hand, to fulfil their mission, JUs must cope with important workload drivers at the planning and implementation level, which go beyond grant management and which do not exist for executive agencies. We noted in particular that the following JU-specific workload drivers at the planning and implementation levels were not considered in the Commission's performance model.

2.50. In the planning phase, a significant part of the work of a JU project officer is to coordinate and communicate scientific priorities for work programmes and the content of calls for proposals. Consequently, project officers must manage and regularly participate in meetings of the different governance bodies of the JU (governing board, scientific advisory body, states' representative group, and stakeholder groups active in the field of the JU), and organise working groups and events to engage industry and research partners, Participating States and stakeholders.

2.51. The implementation of JU projects is more complex than regular Horizon Europe projects due to the focus of their programmes on integrated projects, which bring together the actors around the sector's research and innovation lifecycle. Unlike the executive agencies, JUs must achieve a leverage effect from their private members. This leverage effect is based on the minimum level of costs (in the form of financial and in-kind contributions) that private members are committed to incur in implementing the JU's research and innovation activities. In this context, JUs must manage and validate the new type of in-kind contributions to additional activities (IKAA) reported annually by the private members. Unlike under the Horizon 2020 programme, this new type of IKAA will also cover non-eligible costs incurred for JU projects and can only be declared for projects that are included in the JU's annual work agenda. The productivity model, however, only focuses on the management of EU funding. We therefore consider that, as a minimum, the IKAA to be achieved by the JUs, as well as the financial contributions from the Participating States (EuroHPC and KDT) should also have been considered in the calculation of the JUs' productivity objectives.

2.52. JUs still have to implement an important part of their Horizon 2020 activities during the new MFF programme period (see paragraphs [2.15](#) to [2.17](#)). For some JUs, their Horizon 2020 projects will continue until 2027, while at the same time they have to implement a higher Horizon Europe programme budget. In addition, the parent DG can directly assign additional project tasks to JUs for implementation (e.g. under the CEF or Digital Europe programme).

Planning disregarded resource needs for the new centralised system to manage Participating States' financial contributions

2.53. Based on the Horizon Europe Framework Regulation and their respective founding Regulations for the 2021-2027 MFF, KDT and EuroHPC are obliged to introduce, through a coordinated approach, a new centralised management process,

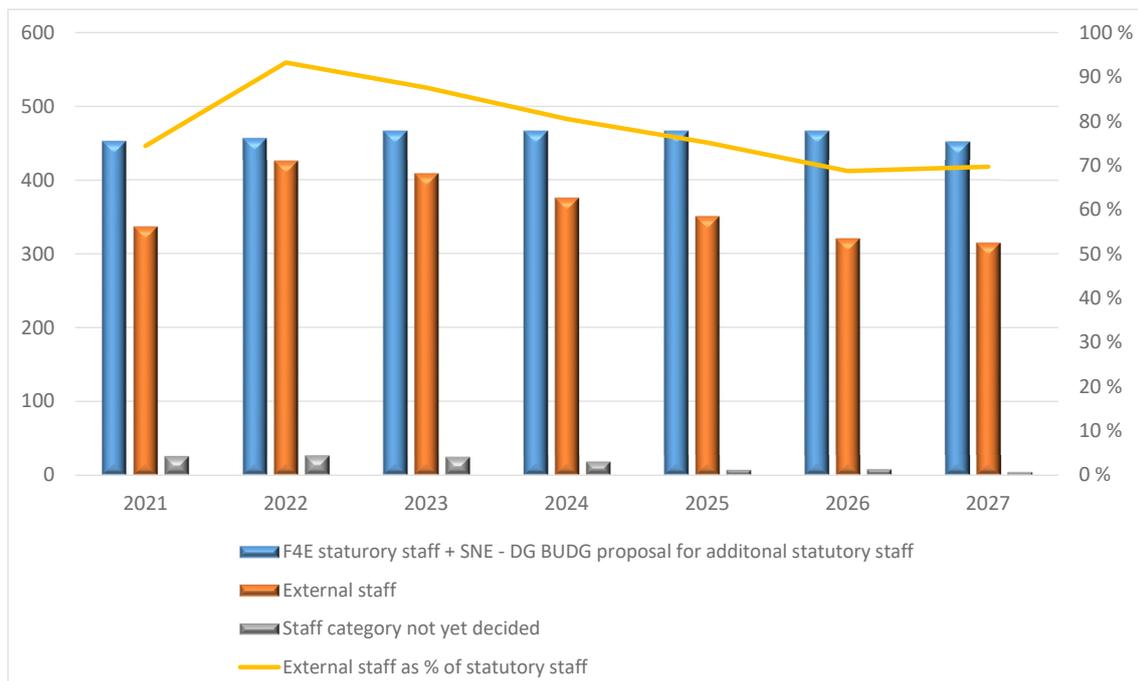
the Central Management of Financial Contributions (CMFC) system, to manage the financial contributions of their Participating States. Under this system, each Participating State can opt to pay to the JU its respective financial contributions at project level for beneficiaries established on its territory. During this process, each Participating State also has a right of veto on all issues concerning the use of its own national financial contributions paid to the JU for applicants established on its territory. This would allow a Participating State to decide, on the basis of national strategic priorities, whether or not to support a national beneficiary of a selected and approved research and innovation project. Affected JUs will also have to execute the co-financing payments for all Participating States, which have differing administrative structures. They will also have to manage and monitor two alternative processes with supporting administrative agreements.

2.54. We note that the additional resource needs for implementing the planned CMFC system was neither assessed by the Commission nor included in the initial staff resource estimates for the implementation of the JUs' new research and innovation agenda. This lack of planning, combined with a lack of IT tools and support from the Commission, may negatively affect the implementation of the JUs' programmes and the achievement of the other members' contributions. If the CMFC has to be done manually, this will be very labour-intensive.

F4E's dependence on external staff has increased in recent years

2.55. In recent years, F4E has become more dependent on external staff. In 2019, external staff represented 62 % of statutory staff. According to the JU's current strategic resource plan for 2021-2027, however, the number of external staff is envisaged to increase in 2022 to 93 % of the maximum statutory staff number approved by the Commission, and then gradually decrease to 70 % by 2027 (see [Figure 2.6](#)).

Figure 2.6 – Development of use of external staff 2021-2027

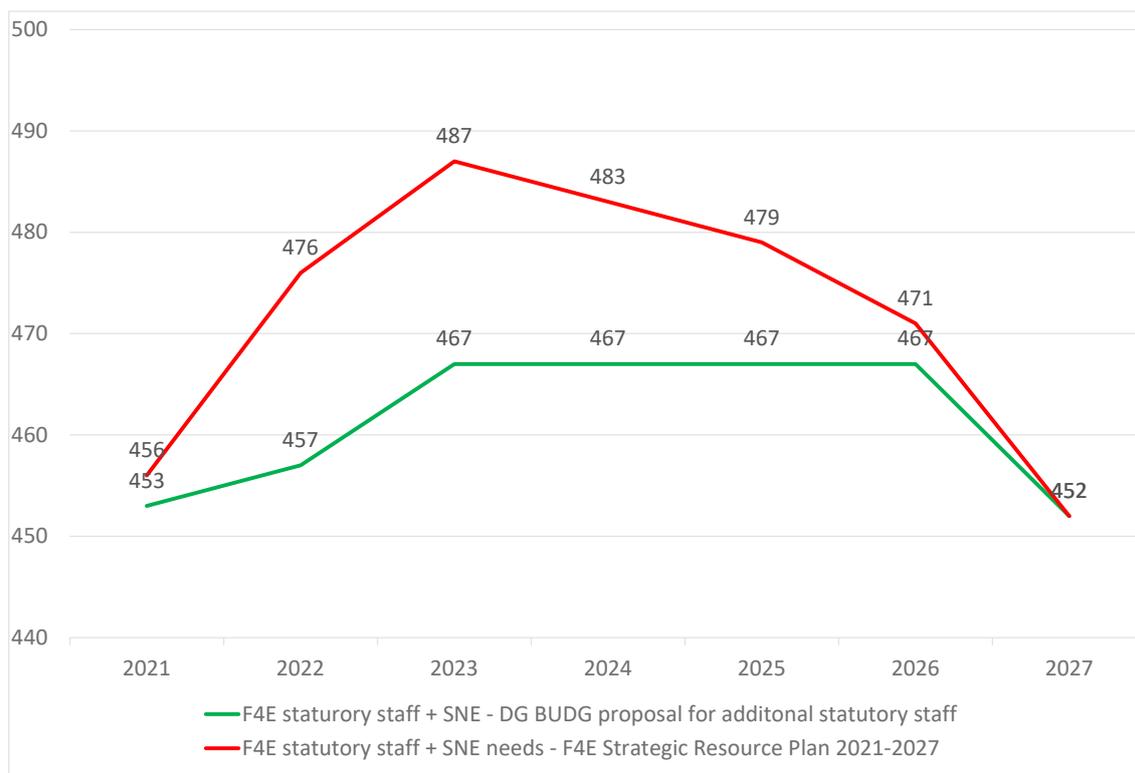


Source: ECA based on F4E data.

2.56. Based on its strategic resource plan for 2021-2027, F4E requested, in the context of the 2023 budget negotiation, a reinforcement of 34 statutory staff members. While the Commission recognised that current statutory staff numbers are insufficient due to the high complexity of the ITER project, it granted only 10 additional statutory staff posts and a delayed phase-out of statutory staff posts towards the end of the project, under the conditions that the additional staff members may only be used for critical issues and that the JU's organisational structure must be revised.

Figure 2.7 shows that under the 2021-2027 MFF, the gap between the statutory staff numbers the Commission granted to F4E and the need for statutory staff estimated in the JU's strategic resource plan will reach its peak in 2023, and then gradually decrease until 2027.

Figure 2.7 – F4E’s estimated statutory staff gap under the 2021-2027 MFF



Source: ECA based on F4E data.

2.57. In addition, the COVID-19 pandemic may have affected the human resources situation of F4E, in particular by increasing costs for external staff and slowing the progress of projects. The new baseline, which the ITER-IO will establish for the ITER project in the first quarter of 2023, will take account of this and propose a re-scheduling. This new baseline and its requirements may affect F4E’s future human resources needs and requests under the 2021-2027 MFF.

2.58. The JU’s high dependence on external staff creates challenges and risks for the working environment. In our 2019 report, we outlined the risks linked to such high levels of external staffing, such as retention risk of high-level and specialised core competences and the risk of inefficient human resource management due to an unclear division of responsibilities between JU and external staff³⁶.

³⁶ ECA 2019 annual report on the EU Joint Undertakings, paragraph 3.9.19.

Action 8

F4E's management should strengthen the measures already undertaken to mitigate the risks related to the use of external staff, in particular, the risk of inefficient management due to the unclear division of responsibilities between statutory and external staff.

Other JU-related products issued by the ECA

2.59. Apart from the annual audit report related to the JUs' annual accounts, in the course of 2021, we also issued various special audit reports and reviews which referred to JUs (see [Figure 2.8](#)).

Figure 2.8 – Other JU- or research-related products recently issued by the ECA

ECA special report 19/2020:

Digitising European Industry: Ambitious initiative whose success depends on the continued commitment of the EU, governments and businesses

While digital transformation is essential for many EU businesses to remain competitive, they are not taking full advantage of advanced technologies to innovate. In this context, in 2016, the Commission launched the Digitising European Industry (DEI) initiative aiming to reinforce the EU's competitiveness in digital technologies.

We examined the extent to which the EU was effective in supporting national strategies on digitalising industry and the Digital Innovation Hubs, and if the Commission and Member States (MS) were effectively implementing the DEI strategy.

We found that the Commission DEI strategy was soundly based and supported by MSs, but lacked information on intended outcomes, result indicators and targets. This makes it more difficult for Commission and MSs to better direct their activities and maximise the influence, and MSs were not encouraged to allocate ESI funding into the initiative.

We recommend that the Commission, together with MSs offer support to MSs in identifying their funding gaps, improving monitoring, and take further action for achieving the appropriate levels of broadband connectivity.

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

Source: ECA.

ECA review 01/2021:

The EU's initial contribution to the public health response to COVID-19

The World Health Organisation classified COVID-19 as a pandemic on 11 March 2020. The Treaty on the Functioning of the European Union only assigns a supporting and coordinating role to the EU for public health, which remains primarily a Member States' (MS) competence.

We reviewed the EU's initial response to the pandemic actions taken from 3 January to 30 June 2020, focusing on the use of the EU framework for dealing with cross-border threats to health, the additional EU actions taken to support the provision of supplies of medical protective equipment, and the EU support for the development of COVID-19 tests and vaccines.

The Commission fostered information exchange between MSs, and supported actions as COVID-19 research and vaccine advanced purchase agreements. The Innovative Medicines Initiative (IMI) Joint Undertaking also launched a call related to corona treatment and testing.

We highlighted some challenges faced by the EU in its support to MS response to COVID-19, such as setting up an appropriate framework for cross-border health threats, facilitating provision of appropriate supplies, and supporting the development of vaccines.

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

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.

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

Joint Undertakings' reply to chapter 2

Action 1 The JUs will honour the invoices issued by the Commission's Office for the Administration and Payment of Individual Entitlements (PMO) and, for what concerns the matter of legislation observed by the ECA, the JUs agree to engage with the Commission for a clearer alignment of the relevant legal bases.

Action 2 The definition and repartition of administrative costs drove the preparation of each JU's budget in the Legal Financial Statements annexed to the Single Basic Act (SBA). Therefore, the "administrative costs", respectively the financial contributions of JUs' members, are now not only defined but also quantified for each JU. Accordingly, the JUs will further explore the detailed content of the "administrative expenditure" for possibilities to harmonise its classification.

Action 3 The JU acknowledges the action proposed by the ECA. As the JU is still relatively young, most of the verification and validation work will occur at the end of the lifetime of the projects. The JU will address this matter in a timely manner. The proposed Central Financial Mechanism (introduced under the new EuroHPC Regulation), is expected to provide the procedures and planning tools needed to strengthen the coordination of annual contributions with Participating States.

Action 4 In cooperation with the Common Implementation Centre (CIC) of the Commission, in 2022 all JUs started implementing actions for error rate reductions in line with the action proposed by the ECA (e.g. including exploring the options of simplified forms of costs also recommended by DG BUDG like unit costs, lump sums and flat rates).

Action 5 Once EuroHPC's amended 2021 Staff Establishment Plan was adopted by its Governing Board on 12 November 2021, recruitment of key staff began immediately on 1 December 2021, in line with the action proposed by the ECA.

Action 6 The JUs are currently using the time-recording module of the HR management system provided by the Commission (SYSPER). Opportunities to increase the level of time recording details traced in SYSPER will be explored in cooperation with the SYSPER service provider.

Action 7 The JUs agree to implement the action in view of the planning process for the MFF 2027-2034 with the objective to be better included in the human resource planning process of the Commission's services. The JUs are ready to undertake this action on the basis of an open tripartite discussion with DG BUDG and their parent DGs. The discussion should also include the possibility of a certain flexibility for JUs to align their staff establishment plans to temporary workload situations.

2.41

SESAR 3, as a tripartite JU, implements – in addition to the EU budget and private members' contributions – contributions from EUROCONTROL of around €500 million for Horizon Europe activities. However, as the Commission did not consider the EUROCONTROL contributions in its productivity model, the resulting lower productivity ratio for SESAR 3 cannot be directly compared to the ratio of the other JUs.

EU-Rail has been entrusted with the new System Pillar activities, to ensure that Research and Innovation integrates a systemic view on the evolution and transformation of the rail system and achieves impact. These activities require additional resources to reach more direct management and supervision. Although it is estimated that this work relates to a budget of more than €30 billion in the migration and deployment phase, it was not included in the Commission's productivity model, resulting in a lower productivity ratio for EU-Rail.



EUROPEAN
COURT
OF AUDITORS

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 International Organization of Supreme Audit Institutions (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 are independent in accordance with the Code of Ethics for Professional Accountants issued by the International Ethics Standards Board for Accountants (IESBA Code) and the ethical requirements that are relevant to our audit, and we have fulfilled our other ethical responsibilities, in accordance with these requirements and the IESBA Code. 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.

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 (including those made for the purchase of assets) other than advances at the point they are made. 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; 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, 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 control.
- 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 on 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 Regulation³⁷.

³⁷ Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council.

3.1.9. For the JUs' research spending under the Horizon 2020 programme, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. With regard to the Common Audit Service of the Commission's DG RTD ex-post audit results, the Commission considered in its proposal for a Horizon 2020 regulation³⁸ that a risk of error, on an annual basis, within a range between 2 % and 5 % is a realistic objective, taking into account the costs of controls and the complexity of rules for the reimbursement of costs of research project. The Commission's ultimate aim for the residual level of error is to achieve at the closure of the Horizon 2020 programme, a level as close as possible to 2 %.

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

³⁸ COM(2011) 809 final.



Joint Undertakings implementing EU Framework Programmes

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

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

Introduction

3.2.1. The Single European Sky Air Traffic Management Research (SESAR) JU, located in Brussels, was set up in February 2007 under the Seventh Research Framework Programme (FP7) for a period of eight years³⁹ (SESAR 1). In June 2014, the Council amended the founding Regulation and extended the lifetime of the JU under the Horizon 2020 programme for a period until 31 December 2024⁴⁰ (SESAR). In November 2021, the Council adopted the Single Basic Act, setting up SESAR 3 to replace SESAR, under the Horizon Europe programme for the period ending on 31 December 2031⁴¹.

3.2.2. SESAR 3 is a public-private partnership for the development of modernised air traffic management in Europe. 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.

³⁹ Council Regulation (EC) No 219/2007 of 27 February 2007 on the establishment of a Joint Undertaking to develop the new generation European air traffic management system (SESAR).

⁴⁰ Council Regulation (EU) No 721/2014 of 16 June 2014 amending Regulation (EC) No 219/2007 on the establishment of a Joint Undertaking to develop the new generation European air traffic management system (SESAR) as regards the extension of the Joint Undertaking until 2024.

⁴¹ Council Regulation (EU) No 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

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

3.2.3. *Table 2.3* presents key figures for the JU.

Table 2.3 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	44.6	119.5
Budget in new commitment appropriations (million euros)	4.3	151.3
Available payment budget (million euros) (1)	69.9	179.2
Available commitment budget (million euros) (1)	34.8	163.2
Total staff as at 31 December (2)	37	38

(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

3.2.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.2.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) forms an integral part of the opinion.

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

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 statements⁴² and the reports on the implementation of the budget⁴³ for the financial year ended 31 December 2021, 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 2021 present fairly, in all material respects, the financial position of the SESAR 3 JU at 31 December 2021, 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.

⁴² 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.

⁴³ 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 for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.2.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme corresponding to the ratio of their non-EU subsidised revenues to their total revenues⁴⁴. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, SESAR 3 (and its predecessor SESAR) have not yet paid such contributions.

3.2.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a

⁴⁴ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

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

percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure⁴⁵. For SESAR, this percentage share is 7.7 % or around €52 221 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations⁴⁶ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act⁴⁷ specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €339 098 per year for the JU (based on 2021 figures). The existence of these conflicting legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on budgetary management

Implementation of the Horizon 2020 budget

3.2.13. *Table 2.4* presents an overview of the members' contributions to the JU for the Horizon 2020 programme at the end of 2021.

Table 2.4 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and bilateral agreements)			Members' contributions (as at 31.12.2021)				
	Operational activities	Additional activities (1)	Total	In cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG Move)	585.0	N/A	585.0	536.2	0.0	0.0	N/A	536.2
Eurocontrol	492.0	N/A	492.0	15.7	230.8	45.0	N/A	291.5
Private members	280.0	N/A	280.0	8.7	192.6	42.1	N/A	243.4
Total	1 357.0	N/A	1 357.0	560.6	423.4	87.1	N/A	1 071.0

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

Source: Data provided by the JU.

⁴⁵ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

⁴⁶ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

⁴⁷ Article 28 of Council Regulation (EU) No 2021/2085.

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

3.2.14. To provide a full picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations. At the end of 2021, the JU had fully committed €555.8 million of the maximum EU contribution for signed grant agreements and contracts under the Horizon 2020 programme. Of this, around €92.5 million (or 16.6 %) remains to be paid in the coming years for projects and contracts yet to be completed. On the other hand, the private members had legally committed to provide the entire in-kind contributions of €280 million, defined in the industry membership agreement, and Eurocontrol to provide contributions of €433.4 million or 91 % of the target of €475 million of operational contributions defined in the bilateral agreement.

3.2.15. The implementation rate for the JU's 2021 payment budget available for Horizon 2020 projects was 93 %. The JU had almost no 2021 operational commitment appropriations as the JU had finished its last call for proposal by the end of 2020.

Observations on management and control systems

3.2.16. For Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. Based on the ex-post audit results available at the end of 2021, the JU reported a representative error rate of 0.7 % and a residual error rate of 0.6 % for Horizon 2020 projects (clearings and final payments)⁴⁸.

3.2.17. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final beneficiaries, to corroborate the ex-post audit error rates⁴⁹. We found and quantified an error in one case where the beneficiary declared direct personnel costs, which should have been declared as sub-contracting cost. However, since the grant agreement did not foresee such expenditure for the beneficiary, these incurred costs were not eligible.

⁴⁸ SESAR JU 2021 Consolidated Annual Activity Report, chapter 4.3.

⁴⁹ Regarding the 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 Joint Undertaking (SESAR)

Follow-up of previous years' observations

3.2.18. 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

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	<p>In January 2020, the JU received from DG MOVE, additional Connecting Europe Facility (CEF) funds of €6 million under the U-Space Delegation Agreement (second and final instalment). However, the JU has neither entered the received CEF funds into the 2020 budget by means of an amending budget, nor considered them when planning actual needs for the budget line 3700 (delivery of very large-scale demonstration activities). Consequently, of the final total available payment budget for the budget line 3700 (delivery of very large-scale demonstration activities) amounting to €36.8 million, the JU had only implemented €21.2 million (or 58 %) at the end of 2020.</p>	N/A

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

Reply of the Joint Undertaking

3.2.12

The SESAR 3 JU intends to follow the 'Guidance for the calculation of the Joint Undertakings employer's pension contributions' issued by DG BUDG in June 2022. This guidance is exclusively based on the Staff regulations that do not distinguish between administrative and operational revenue. The SESAR 3 JU will pay the amount that the Commission will invoice.

3.2.17

It is considered that the way the costs were reported (as personnel costs) is the result of an unintentional mistake by the beneficiary, who is a small organisation and for whom this was the first H2020 project. The cost item of 11 400 euros and the related indirect costs of 2 850 euro will be rejected by the SESAR 3 JU.

3.3. The Clean Aviation Joint Undertaking (CA)

Introduction

3.3.1. The Joint Undertaking for the implementation of the Joint Technology Initiative in Aeronautics, located in Brussels, was set up in December 2007 under the Seventh Research Framework Programme (FP7) for a period of ten years⁵⁰ (Clean Sky 1). In May 2014, the Council extended the lifetime of the JU under the Horizon 2020 programme for a period until 31 December 2024⁵¹ (Clean Sky 2). In November 2021, the Council adopted the Single Basic Act, setting up the [Clean Aviation \(CA\) JU](#) to replace Clean Sky 2, under the Horizon Europe programme for the period ending on 31 December 2031⁵².

3.3.2. CA is a public-private partnership for transforming aviation towards a sustainable and climate neutral future. Its founding members are the EU, represented by the Commission, and organisations from the aviation sector engaged in creating new global standard for reliable and climate-neutral aviation systems.

3.3.3. [Table 3.1](#) presents key figures for the JU.

⁵⁰ Council Regulation (EC) No 71/2008 of 20 December 2007 setting up the Clean Sky JU.

⁵¹ Council Regulation (EU) No 558/2014 of 6 May 2014 establishing the Clean Sky 2 JU.

⁵² Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

The Clean Aviation Joint Undertaking (CA)

Table 3.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	89.3	315.6
Budget in new commitment appropriations (million euros)	4.3	315.7
Available payment budget (million euros) (1)	189.9	356.6
Available commitment budget (million euros) (1)	182.6	346.7
Total staff as at 31 December (2)	42	43

(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

3.3.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.3.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) 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 JU, which comprise the financial statements⁵³ and the reports on the implementation of the budget⁵⁴ for the financial year ended 31 December 2021, 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

3.3.7. In our opinion, the accounts of the CA JU for the year ended 31 December 2021 present fairly, in all material respects, the financial position of the CA JU at 31 December 2021, 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 Clean Aviation Joint Undertaking (CA)

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 for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.3.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme corresponding to the ratio of their non-EU subsidised revenues to their total revenues⁵⁵. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, CA (and its predecessor Clean Sky 2) had not yet paid such contributions.

3.3.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a

⁵⁵ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

The Clean Aviation Joint Undertaking (CA)

percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure⁵⁶. For CA this percentage share is 2.3 % or around €16 581 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations⁵⁷ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €360 453 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on budgetary management

Implementation of the Horizon 2020 budget

3.3.13. *Table 3.2* presents an overview of the members' contributions to the JU for the Horizon 2020 programme, at the end of 2021.

Table 3.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	1 755.0	0.0	1 755.0	1 536.0	N/A	N/A	N/A	1 536.0
Private members	1 228.5	965.3	2 193.8	27.4	581.3	242.5	1 290.0	2 141.2
Total	2 983.5	965.3	3 948.8	1 563.4	581.3	242.5	1 290.0	3 677.2

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

Source: Data provided by the JU.

3.3.14. To provide a full picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations. At the end of

⁵⁶ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

⁵⁷ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

The Clean Aviation Joint Undertaking (CA)

2021, the JU had almost fully committed €1 716 million of the maximum EU contribution for signed Horizon 2020 grant agreements. Of this, around €273 million (or 16 %) remains to be paid in the coming years. On the other hand, the private members had legally committed to provide in-kind contributions of €2 113.8 million.

3.3.15. The implementation rate for the JU's 2021 commitment and payment budget available for Horizon 2020 projects was 100 % and 83 % respectively.

Observations on the management and control systems

3.3.16. For Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. Based on the ex-post audit results available at the end of 2021, the JU reported a representative error rate of 1.8 % and a residual error rate of 1.0 % for Horizon 2020 projects (clearings and final payments)⁵⁸.

3.3.17. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final beneficiaries, to corroborate the ex-post audit error rates⁵⁹. In one case, we found and quantified a systemic error related to the incorrect calculation of the hourly rates for personnel costs.

3.3.18. In 2021, important documents (for example, evaluation committee members' declarations of absence of conflict of interests; procurement evaluation reports; recruitment evaluation reports; decisions on recruitment selection boards; procurement award decisions, and employment contracts) were authorised by copying 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 a rejected candidate may challenge the regularity of the signed evaluation documents.

⁵⁸ CA JU 2021 Consolidated Annual Activity Report, chapter 4.3.

⁵⁹ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

The Clean Aviation Joint Undertaking (CA)

Follow-up of previous years' observations

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

The Clean Aviation Joint Undertaking (CA)

Annex – Follow-up of previous years' observations

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	<p>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.</p>	Outstanding

Reply of the Joint Undertaking

3.3.11

We are open and willing to resolve the matter and in cooperation with the Commission's services. JUs have collectively sought clarifications and guidance from the Commission with regard to the finding from the ECA.

3.3.12

As mentioned under item 3.3.11, the JU agrees to resolve the matter in cooperation with the Commission's services. However, we have no mandate to agree that a contradiction exists between the estimation approach provided by EC services based on the applicable provisions of the Staff Regulations for defining the share of the EU bodies of the pension contribution for their staff and the referenced provisions of the Single Basic Act.

3.3.18

The finding applies only to a limited part of the JU daily operations, since all grant and expert management-related tasks are processed through the electronic grant management systems. The finding has been addressed in 2022. The JU has implemented EU-sign certified electronic signature (legally equivalent of a handwritten signature).

3.3.19 (Annex: follow-up of the previous year's observation)

The situation remains unchanged compared to the previous year. The JU has been obliged to constantly enlarge the use of interim staff during the past years due to the limitations of the rigid staff establishment plan under the condition of increasing tasks and workload. The JU is currently going through a high workload phase, with the two programmes – the Clean Sky 2 and the new Clean Aviation programme – running in parallel. The JU has launched an open call for tenders to contract the services of an external consultancy for operational support (programme, finance and audit management, legal services). This support is expected to provide more stable working resources. A more optimal solution would be to provide more flexibility to the JU with regards to number of contract agents' posts in the staff establishment plan.

3.4. The Innovative Health Initiative Joint Undertaking (IHI)

Introduction

3.4.1. The Innovative Medicines Initiative JU, located in Brussels, was set up in December 2007⁶⁰ under the Seventh Research Framework Programme (FP7) for a period of ten years (IMI 1). In May 2014, the Council extended the lifetime of the JU under the Horizon 2020 programme for a period until 31 December 2024⁶¹ (IMI 2). In November 2021, the Council adopted the Single Basic Act⁶², setting up the [Innovative Health Initiative \(IHI\) JU](#) to replace IMI 2 under the Horizon Europe programme for the period ending on 31 December 2031.

3.4.2. IHI is a public-private partnership for health research and innovation. The goal of IHI is to help create an EU-wide health research and innovation ecosystem that facilitates the translation of scientific knowledge into tangible innovations. These innovations should cover prevention, diagnostics, treatment and disease management. Its founding members are the EU, represented by the Commission, the COCIR Advancing Healthcare, the European Federation of Pharmaceutical Industries and Associations including Vaccines Europe (EFPIA), the EuropaBio, and MedTech Europe.

⁶⁰ Council Regulation (EC) No 73/2008 of 20 December 2007 setting up the JU for the implementation of the Joint Technology Initiative on Innovative Medicines.

⁶¹ Council Regulation (EU) No 557/2014 of 6 May 2014 establishing the Innovative Medicines Initiative 2 JU.

⁶² Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

The Innovative Health Initiative Joint Undertaking (IHI)

3.4.3. *Table 4.1* presents key figures for the JU.

Table 4.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	207.1	233.8
Budget in new commitment appropriations (million euros)	9.1	260.5
Available payment budget (million euros) (1)	210.4	241.6
Available commitment budget (million euros) (1)	11.0	276.5
Total staff as at 31 December (2)	50	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.

Information in support of the statement of assurance

3.4.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.4.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) 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 statements⁶³ and the reports on the implementation of the budget⁶⁴ for the financial year ended 31 December 2021, 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 2021 present fairly, in all material respects, the financial position of the IHI JU at 31 December 2021, 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.

⁶³ 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.

⁶⁴ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The Innovative Health Initiative Joint Undertaking (IHI)

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 for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.4.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme corresponding to the ratio of their non-EU subsidised revenues to their total revenues⁶⁵. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, IHI (and its predecessor IMI 2) had not yet paid such contributions.

3.4.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a

⁶⁵ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

The Innovative Health Initiative Joint Undertaking (IHI)

percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure⁶⁶. For IHI this percentage share is 2.5 % or around €19 693 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations⁶⁷ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act⁶⁸ specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €393 856 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on budgetary management

Implementation of the FP7

3.4.13. *Table 4.2* presents an overview of the members' contributions to the JU for the FP7 programme, at the end of 2021.

Table 4.2 – Members' contributions for FP7 (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	1 000.0	N/A	1 000.0	938.4	0.0	0.0	N/A	938.4
Private members	1 000.0	N/A	1 000.0	21.9	766.7	38.0	N/A	826.6
Total	2 000.0	N/A	2 000.0	960.3	766.7	38.0	N/A	1 765.0

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

Source: Data provided by the JU.

⁶⁶ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

⁶⁷ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

⁶⁸ Article 13 of Annex 1 to the Council Regulation (EU) No 557/2014, and Article 28 of Council Regulation (EU) 2021/2085.

The Innovative Health Initiative Joint Undertaking (IHI)

3.4.14. As regards the JU's operational obligations at the end of 2021, the JU had fully committed €966 million of the maximum EU contribution for signed FP7 grant agreements. Of this, around €84.3 million (or 8.7 %) remains to be paid in the coming years. Private members provided in-kind contributions at the same level. The implementation rate for the JU's 2021 payment budget available for FP7 projects was 80 %. The JU had almost no 2021 operational commitment appropriations, as it had finished its last call for proposals by the end of 2014.

Implementation of the Horizon 2020

3.4.15. *Table 4.3* presents an overview of the members' contributions to the JU for the Horizon 2020 programme, at the end of 2021.

Table 4.3 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	1 638.0	N/A	1 638.0	838.0	0.0	0.0	N/A	838.0
EFPIA and Associated Partners	1 638.0	N/A	1 638.0	31.9	606.3	251.0	N/A	889.2
Total	3 276.0	N/A	3 276.0	869.9	606.3	251.0	N/A	1 727.2

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

Source: Data provided by the JU.

3.4.16. To provide a full picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations. At the end of 2021, the JU had committed €1 452.1 million or 91 % of €1 595.4 million of the maximum EU contribution for signed Horizon 2020 grant agreements. This situation was mainly caused by the fact that the 2019 call for proposals could not cover all topics planned and the EU budget had been reduced accordingly by decision of the Governing Board. Of this committed amount, around €616.8 million (or 42.5 %) remains to be paid in the coming years. On the other hand, the private members had legally committed to provide in-kind contributions of €1 520.7 million.

3.4.17. The implementation rate for the JU's 2021 payment budget available for Horizon 2020 projects was 97 %. The JU had almost no 2021 operational commitment appropriations as the JU had finished its last call for proposals by the end of 2020.

The Innovative Health Initiative Joint Undertaking (IHI)

Observations on the management and control systems

3.4.18. For FP7 interim and final payments, the JU performs ex-post audits, whilst for Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. Based on the ex-post audit results available at the end of 2021, the JU reported a representative error rate of 1.9 % and a residual error rate of 0.8 % for its FP7 projects⁶⁹, and a representative error rate of 0.97 % and a residual error rate of 0.6 % for Horizon 2020 projects (clearings and final payments)⁷⁰.

3.4.19. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final beneficiaries, to corroborate the ex-post audit error rates⁷¹. In one case, we found and quantified a systemic error related to personnel costs resulting from the use of incorrect hourly rates that were not based on a completed financial year, and in another case, an error resulting from the lack of appropriate supporting evidence for declared equipment and travel costs.

Follow-up of previous years' observations

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

⁶⁹ IHI JU 2021 Consolidated Annual Activity Report, chapter 2.7.2.

⁷⁰ IHI JU 2021 Consolidated Annual Activity Report, chapter 2.7.2.

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

The Innovative Health Initiative Joint Undertaking (IHI)

Annex - Follow-up of previous years' observations

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	<p>The JU's administrative budget is managed as a dissociated budget (meaning that the amount of the commitment budget differs from the amount of payment budget) and the reactivation of previous years' unused payment appropriations should be limited to the extent where the payment appropriations of the year are insufficient to cover the contractual obligations of the year. The JU's practice of reactivating unused payment appropriations from previous years to the extent of open administrative commitments, results in an accumulation of unused payment appropriations. Aggravated by the impact of the COVID-19 pandemic on planned costs for IT, communication, meetings, events and other services , this practice resulted in a low budget implementation rate for the JU's administrative budget (Title 2 infrastructure expenditure representing around 3 % of the JU's total available payment budget), which was 51 % at the end of 2020.</p>	Completed

The Innovative Health Initiative Joint Undertaking (IHI)

Reply of the Joint Undertaking

3.4.11

IHI JU is committed and eager to resolve this situation in close cooperation with the Commission services.

We will follow Commission guidelines (latest version of 20 June 2022) and will process the payment as soon as the debit note is received.

3.4.12

For the payment of the employer part of the pension contribution, IHI JU adheres to the Commission guidance that was prepared by DG BUDG.

3.5. The Clean Hydrogen Joint Undertaking (Clean H2)

Introduction

3.5.1. The JU for the implementation of the Joint Technology Initiative on Fuel Cells and Hydrogen (FCH), located in Brussels, was set up in May 2008 under the Seventh Research Framework Programme (FP7) for the period up to 31 December 2017⁷² (FCH 1). In May 2014, the Council adopted a new founding regulation extending the lifetime of the JU under the Horizon 2020 programme for a period until 31 December 2024⁷³ (FCH 2). In November 2021, the Council adopted the Single Basic Act, setting up the [Clean Hydrogen \(Clean H2\) JU](#) to replace FCH 2, under the Horizon Europe programme for the period ending on 31 December 2031⁷⁴.

3.5.2. Clean H2 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 Grouping (Hydrogen Europe) and the Research Grouping (Hydrogen Europe Research).

⁷² Council Regulation (EC) No 521/2008 of 30 May 2008 setting up the Fuel Cells and Hydrogen JU.

⁷³ Council Regulation (EU) No 559/2014 of 6 May 2014 establishing the Fuel Cells and Hydrogen 2 JU.

⁷⁴ Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

The Clean Hydrogen Joint Undertaking (Clean H2)

3.5.3. *Table 5.1* presents key figures for the JU.

Table 5.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	50.0	85.4
Budget in new commitment appropriations (million euros)	5.3	86.3
Available payment budget (million euros) (1)	56.2	103.8
Available commitment budget (million euros) (1)	15.8	104.2
Total staff as at 31 December (2)	27	29

(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

3.5.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.5.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) 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 statements⁷⁵ and the reports on the implementation of the budget⁷⁶ for the financial year ended 31 December 2021, 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 2021 present fairly, in all material respects, the financial position of the Clean H2 JU at 31 December 2021, 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.

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.

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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 for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.5.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme corresponding to the ratio of their non-EU subsidised revenues to their total revenues⁷⁷. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, Clean H2 (and its predecessor FCH 2) had not yet paid such contributions.

3.5.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a

⁷⁷ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

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percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure⁷⁸. For Clean H2 this percentage share is 2.9 % or around €12 971 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations⁷⁹ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act⁸⁰ specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €223 642 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on budgetary management

Implementation of the FP7 budget

3.5.13. *Table 5.2* presents an overview of the members' contributions to the JU for the FP7 programme, at the end of 2021.

Table 5.2 – Members' contributions for FP7 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	470.0	N/A	470.0	407.4	19.1	0.0	N/A	426.5
Private members	470.0	N/A	470.0	17.9	443.9	4.2	N/A	466.0
Total	940.0	N/A	940.0	425.3	463.0	4.2	N/A	892.5

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

Source: Data provided by the JU.

⁷⁸ For the purpose of simplification, the Commission proposed to estimate the JU's employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

⁷⁹ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

⁸⁰ Article 15 of Annex 1 to the Council Regulation (EU) No 559/2014, and Article 28 of Council Regulation (EU) 2021/2085.

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3.5.14. At the end of 2021, the JU had committed €425.5 million or 95 % of €450 million of the maximum EU contribution for signed FP7 grant agreements. Of this, around €3.0 million (or 0.7 %) remained to be paid in the coming years. Private partners provided in-kind contributions at the same level. The implementation rate for the JU's 2021 payment budget available for FP7 projects was 97.8 %. The JU had almost no 2021 operational commitment appropriations, as it had finished its last call for proposals by the end of 2014.

Implementation of the Horizon 2020 budget

3.5.15. *Table 5.3* presents an overview of the members' contributions to the JU for the Horizon 2020 programme, at the end of 2021.

Table 5.3 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	665.0	0.0	665.0	545.5	0.0	0.0	0.0	545.5
Private members	95.0	285.0	380.0	11.4	38.6	51.3	1 039.0	1 140.3
Total	760.0	285.0	1 045.0	556.9	38.6	51.3	1 039.0	1 685.8

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

Source: Data provided by the JU.

3.5.16. The low level of validated private members' in-kind contributions for operational activities of €38.6 million, is due to the fact that the JU certifies them later in the Horizon 2020 programme, when the final payment for the projects is made and the certificates of financial statement (CFS) are due.

3.5.17. To provide a full picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations. At the end of 2021, the JU had fully committed €646 million of the maximum EU contribution for signed Horizon 2020 grant agreements and contracts. Of this, around €112.6 million (or 17.8 %) remains to be paid in the coming years. On the other hand, the private members had legally committed to provide in-kind contributions of €158.3 million.

3.5.18. The implementation rate for the JU's 2021 commitment and payment budget available for Horizon 2020 projects was 98 % and 87.8 % respectively.

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Observations on the management and control systems

3.5.19. For FP7 interim and final payments, the JU performs ex-post audits at the beneficiaries, whilst for Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audits. Based on the ex-post audit results available at the end of 2021, the JU reported a representative error rate of 2.0 % and a residual error rate of 1.0 % for its FP7 projects⁸¹, and a representative error rate of 2.16 % and a residual error rate of 1.3 % for Horizon 2020 projects (clearings and final payments)⁸².

3.5.20. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final beneficiaries, to corroborate the ex-post audit error rates⁸³. In one case, we found and quantified an error resulting from personnel costs having been over claimed due to a clerical mistake, and in another case, a systemic non-quantifiable control weakness related to the absence of the beneficiary's validation procedure for the worked hours on the project.

Follow-up of previous years' observations

3.5.21. An overview of the corrective action taken in response to our observations from previous years is provided in the *Annex*.

⁸¹ Clean H2 JU 2021 Annual Activity Report, chapter 4.3.

⁸² Clean H2 JU 2021 Annual Activity Report, chapter 4.3.

⁸³ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

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Annex – Follow-up of previous years' observations

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	<p>The JU's administrative budget is managed as a dissociated budget (meaning that the amount of the commitment budget differs from the amount of payment budget) and the reactivation of previous years' unused payment appropriations should be limited to the extent where the payment appropriations of the year are insufficient to cover the contractual obligations of the year. The JU's practice of reactivating unused payment appropriations from previous years to the extent of open administrative commitments, results in an accumulation of unused payment appropriations. Aggravated by the impact of the COVID-19 pandemic on planned costs for IT, communication, missions, meetings, events and other services, this practice resulted in a low budget implementation rate for the JU's administrative budget (Title 2 infrastructure and communication expenditure representing around 3 % of the JU's total available payment budget), which was 56 % at the end of 2020.</p>	Completed
2020	<p>In April 2020, the JU launched an open procurement procedure for a framework contract related to the implementation of the third phase of the project to develop a H2 certification scheme for compliance with the revised renewable energy directive (REDII)⁸⁴. Although the consortium that had already implemented the first two phases of the project was in a situation of a knowledge advantage, the JU used the open procurement</p>	N/A

⁸⁴ Directive (EU) 2018/2001 (recast) on the promotion of the use of energy from renewable sources.

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Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
	<p>procedure for implementing the third phase of the project. As a result, a consortium with the same coordinator who already had implemented the previous two phases was the only candidate that submitted a tender, and made a financial offer close to the maximum estimated contract value set out in the tender specifications.</p> <p>Due to the use of an open procurement procedure in a situation of knowledge advantage, the best price-quality ratio objective could not be fully demonstrated. To increase competition and to allow a better estimation of price from the market, the JU is encouraged to carry out preliminary market research on price and consult with other companies acting in the hydrogen market.</p>	
2020	<p>The JU used interim staff for the function of “Service knowledge management” for a period of around 2.5 years. According to the Commission’s framework contract for interim services the use of interim staff, however, is limited to office work of a one-off or temporary nature, arising from an exceptional increase in workload or the performance of a one-off activity, or to fill a vacant post pending the recruitment of a permanent staff member. The JU’s practice is against this principle and in fact creates a permanent post, in addition to those foreseen in the staff establishment plans.</p>	Completed

Reply of the Joint Undertaking

3.5.11

JUs have collectively sought clarifications and guidance from the Commission with regard to the finding from the ECA. We are open and willing to resolve the matter following guidance received from the Commission services.

3.5.12

For the payment of the employer's part of the pension contribution, Clean Hydrogen JU will follow the instructions of the Commission services. Nevertheless, it should be noted that the JUs have already established their multi-annual budget based on overall revenues for administrative expenditure as set forth in the Single Basic Act (SBA). As these revenues are fixed at a maximum level in the SBA and cannot be exceeded, the final decision on the amount to be provisioned for in relation to contribution to the pension scheme may have very significant implications on the ability of the JU to deliver its planned activities and the related expenditure.

3.6. The Key Digital Technologies Joint Undertaking (KDT)

Introduction

3.6.1. The Electronic Components and Systems for European Leadership (ECSEL) JU, located in Brussels, was set up in May 2014 under the Horizon 2020 programme, for a period until 31 December 2024⁸⁵. ECSEL replaced and succeeded the ENIAC and ARTEMIS JUs, which closed on 26 June 2014. In November 2021, the Council adopted the Single Basic Act, setting up the [Key Digital Technologies \(KDT\) JU](#) to replace ECSEL, under the Horizon Europe programme for the period ending on 31 December 2031⁸⁶.

3.6.2. The KDT JU is a public-private partnership managing a research and innovation programme aiming at reinforcing the EU's strategic autonomy 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 (EPoSS), Association for European Nano Electronics Activities (AENEAS), and the Inside Industry Association, representing stakeholders in micro- and nanoelectronics, smart integrated systems and embedded/cyber-physical systems.

⁸⁵ [Council Regulation \(EU\) No 561/2014](#) of 6 May 2014 establishing the ECSEL JU.

⁸⁶ [Council Regulation \(EU\) 2021/2085](#) of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

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3.6.3. *Table 6.1* presents key figures for the JU.

Table 6.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	155.8	137.4
Budget in new commitment appropriations (million euros)	212.4	209.0
Available payment budget (million euros) (1)	199.3	215.8
Available commitment budget (million euros) (1)	214.0	218.3
Total staff as at 31 December (2)	29	29

(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

3.6.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.6.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) 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

3.6.6. We have audited:

- (a) the accounts of the KDT JU, which comprise the financial statements⁸⁷ and the reports on the implementation of the budget⁸⁸ for the financial year ended 31 December 2021, 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

3.6.7. In our opinion, the accounts of the KDT JU for the year ended 31 December 2021 present fairly, in all material respects, the financial position of the KDT JU at 31 December 2021, 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.

⁸⁷ 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.

⁸⁸ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The Key Digital Technologies Joint Undertaking (KDT)

Legality and regularity of the transactions underlying the accounts

Revenue

Opinion on the legality and regularity of revenue underlying the accounts

3.6.8. In our opinion, the revenue underlying the accounts for the year ended 31 December 2021 is legal and regular in all material respects.

Payments

Opinion on the legality and regularity of payments underlying the accounts

3.6.9. In our opinion, the payments underlying the accounts for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.6.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme, corresponding to the ratio of their non-EU subsidised revenues to their total revenues⁸⁹. As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, the KDT JU (and its predecessor the ECSEL JU) had not yet paid such contributions.

3.6.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a

⁸⁹ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

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percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure⁹⁰, cash contributions from Participating States, which are not channelled through the EU budget, also being considered as non-EU revenue. For KDT this percentage share is 50.1 % or around €243 904 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations⁹¹ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act⁹² specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €243 417 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on budgetary management

Implementation of the FP7 budget

3.6.13. The JU succeeded the ENIAC and ARTEMIS JUs on 26 June 2014 and took over the implementation of their FP7 activities.

3.6.14. At the end of 2021, the JU financially closed all on-going FP7 projects. Based on the total costs of signed FP7 activities and the actual payments made by the JU (and its predecessors ENIAC, ARTEMIS, and ECSEL JU) for the co-financing of these activities, the final contributions of the members are estimated as follows: EU: €564.3 million, Participating States: €812.5 million, and private members in-kind contributions: €2 202.4 million.

⁹⁰ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

⁹¹ [Article 83a of Regulation No 31 \(EEC\), 11 \(EAEC\)](#) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

⁹² [Article 28 of Council Regulation \(EU\) 2021/2085](#).

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Implementation of the Horizon 2020 budget

3.6.15. *Table 6.2* presents an overview of the members' contributions to the JU for the Horizon 2020 programme, at the end of 2021.

Table 6.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG CNECT)	1 185.0	N/A	1 185.0	1 058.1	N/A	N/A	N/A	1 058.1
Private members	1 657.5	N/A	1 657.5	22.2	300.6	968.2	N/A	1 291.0
Participating States (2)	1 170.0	N/A	1 170.0	450.2	N/A	N/A	N/A	450.2
Total	4 012.5	N/A	4 012.5	1 530.5	300.6	968.2	N/A	2 799.3

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

(2) Participating States pay their contributions directly to the beneficiaries.

Source: Data provided by the JU.

3.6.16. To provide a full picture of the JU's achievements, it is necessary to also consider the current level of the JU members' operational obligations. At the end of 2021, the JU had fully committed €1 170 million of the maximum EU contribution for signed Horizon 2020 grant agreements. Of this, around €190.3 million (or 16.6 %) remains to be paid in the coming years.

3.6.17. The implementation rate for the JU's 2021 payment budget available for Horizon 2020 projects was 85 %. The JU had almost no 2021 operational commitment appropriations as the JU had finished its last call for proposal by the end of 2020.

3.6.18. At the end of 2021, the private members' potential final in-kind contributions for operational Horizon 2020 activities were estimated at €1 594.2 million. It is to be noted that the JU can only calculate and validate the actual amount of the 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 information have been received. In this context, and given that at the end of 2021 only a limited number of Horizon 2020 projects had been finalised, the validated industry in-kind contributions amounted to €300.6 million. At the end of 2021, the cumulative estimated and (not yet validated) in-kind contributions from private members amounted to €968.2 million, based on a "pro-rata temporis" methodology adopted by the JU's Governing Board.

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3.6.19. At the end of 2021, the Participating States signed contractual commitments amounting to €1 106.2 million⁹³ and declared total financial contributions of €450.2 million, which they paid directly to the national beneficiaries of the Horizon 2020 projects they supported. The difference between the amount of Participating States' financial contribution and the EU's financial contribution of €1 058.1 million at the end of 2021, is due to the fact that most Participating States only recognise and report their costs to the JU on the completion of the Horizon 2020 projects they support.

Observations on the management and control systems

3.6.20. Administrative agreements concluded by the ARTEMIS and ENIAC JUs with the National Funding Authorities (NFAs) continue to apply following their merger to form the ECSEL JU. Under these agreements, the ARTEMIS and ENIAC JUs' ex-post audit strategies relied heavily on the NFAs to audit project cost claims⁹⁴. The significant variation in the methodologies and procedures used by the NFAs does not allow the ECSEL JU to calculate a single reliable weighted error rate or a residual error rate for FP7 payments. As the JU's total payments in 2021 to close the remaining FP7 projects only amounted to €0.6 million, or 0.4 % of the total operational payments, they did not represent a risk of material errors in 2021.

3.6.21. For Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD carries out the ex-post audits. Based on its audit results at the end of 2021, the JU reported a representative error rate for Horizon 2020 of 2.2 % and a residual error rate of 1.2 %⁹⁵.

3.6.22. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final

⁹³ This amount is estimated on the basis of the JU's Public Authorities Board funding decisions for the calls for proposals 2014 to 2020.

⁹⁴ According to the ex-post audit strategies adopted by ARTEMIS and ENIAC, the JUs must assess at least once a year whether the information received from the Member States provides sufficient assurance as to the regularity and legality of the transactions carried out.

⁹⁵ KDT JU 2021 Annual Activity Report, chapter 8.2.3.

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beneficiaries, to corroborate the ex-post audit error rates⁹⁶. In two cases, we found and quantified errors resulting from personnel costs having been over claimed.

The new centralised system to manage Participating States' financial contributions

3.6.23. Based on the Horizon Europe Framework Regulation and the Single Basic Act, the JU is obliged to introduce a new centralised management process, the Central Management of Financial Contributions (CMFC) system, to manage the financial contributions of its Participating States.

3.6.24. Under the planned CMFC system, each Participating State can opt to pay to the JU its respective financial contributions at project level for beneficiaries established in its State. During this process, each Participating State also has a right of veto on all issues concerning the use of its own national financial contributions, paid to the JU for applicants established in its state, in line with EU's financial and competition rules. This allows a Participating State to decide, on the basis of national strategic priorities, whether or not to support a national beneficiary of a selected and approved research and innovation project.

3.6.25. On the other hand, the JU will have to execute the co-financing payments for all Participating States that choose to entrust the JU with their financial contributions. It will have to manage and monitor two alternative processes of supporting administrative agreements with Participating States. Each Participating State's National Funding Authority (NFA) has to sign an administrative agreement with the JU, to either entrust the JU with the payment of national contributions, or to coordinate national transfer of funds agreements for the payments to beneficiaries and reporting on contributions.

3.6.26. We note that the JU's additional resource needs for implementing the planned CMFC 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. This lack of planning in the introduction of the CMFC system combined with the staff situation, and the lack of IT tools and support may negatively affect the implementation of the JU's programmes and the achievement of the other members'

⁹⁶ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

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contributions. If the CMFC must be managed manually, this will be human resource intensive.

Observation on other issues

The JU's human resources situation

3.6.27. With the Commission's proposal amending the Single Basic Act⁹⁷, the KDT JU will be transformed into the future Chips JU, with a new remit related to the implementation of the "Chips for Europe Initiative" under the new 2021-2027 MFF. In this context, the JU will support the development of innovative next-generation semiconductor technologies that should reinforce the EU's chip-production capability. According to this proposal, the JU will implement projects of about €10.9 billion under the new 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 (13 temporary staff and 16 contractual staff) 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.

Follow-up of previous years' observations

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

⁹⁷ [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 of 8.2.2022.

The Key Digital Technologies Joint Undertaking (KDT)

Annex – Follow-up of previous years' observations

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	<p>Neither the JU's 2020 provisional annual accounts nor its 2020 budgetary and financial management report disclose the estimates of:</p> <ul style="list-style-type: none"> — the financial contributions of Participating States to the FP7 projects of ARTEMIS and ENIAC, and — the in-kind contributions made by research and development organisations participating in FP7 projects of ARTEMIS and ENIAC. 	Completed

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3.6.11 and **3.6.12**

The KDT JU is willing to resolve the matter and bring it into compliance with all respective regulations in cooperation with the Commission's relevant services. Following a common request by all JUs towards the Commission services, the Commission issued in June 2022 a guidance for the calculation of the Joint Undertakings employer's pension contributions. The KDT JU is currently examining the Commission's proposal and calculation as per the guidance issued and discussions with its members are ongoing with regard to the Participating States contributions, as these contributions are paid directly to the beneficiaries and not to the JU and do not relate to the administrative costs. The Governing Board should be informed in due time.

3.6.26

The KDT JU has no additional human resources to manage the CFMC system (the new complex task) and the JU has consistently raised this risk of inadequate resources in the yearly risk assessment exercise. The JU did request an increase of resources. The JU is putting in place internal procedures to ensure a proper functioning of the CFM system and is assessing the allocation of needed resources. Implementation of the CFM system can start at the earliest with the call for 2023 projects.

3.6.27

The JU acknowledges that recruitment of additional 19 staff by 2025 is a challenge that will run in parallel to the new administrative and operational processes that have to be established. It is important to clarify the timing, as there have been delays in the process and adoption of the Chips Act is now planned for the second half of 2023. Given this timeframe, the first recruitments will take place only as from the end of 2023.

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

Introduction

3.7.1. The Bio-based Industries (BBI) JU, located in Brussels, was set up in May 2014 under the Horizon 2020 programme for a period until 31 December 2024⁹⁸. In November 2021, the Council adopted the Single Basic Act, setting up the [Circular Bio-based Europe \(CBE\) JU](#) to replace BBI, under the Horizon Europe programme for the period ending on 31 December 2031⁹⁹.

3.7.2. CBE is a public-private partnership in the bio-based industries sector. Its founding members are the EU, represented by the Commission, and industrial partners represented by the Bio-based Industries Consortium (BIC).

3.7.3. [Table 7.1](#) presents key figures for the JU.

Table 7.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	127.1	191.2
Budget in new commitment appropriations (million euros)	4.6	72.2
Available payment budget (million euros) (1)	174.8	196.6
Available commitment budget (million euros) (1)	5.3	111.7
Total staff as at 31 December (2)	22	23

(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.

⁹⁸ Council Regulation (EU) No 560/2014 of 6 May 2014 establishing the BBI JU.

⁹⁹ Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

The Circular Bio-based Europe Joint Undertaking (CBE)

Information in support of the statement of assurance

3.7.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.7.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page **151** 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 statements¹⁰⁰ and the reports on the implementation of the budget¹⁰¹ for the financial year ended 31 December 2021, 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).

¹⁰⁰ 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.

¹⁰¹ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The Circular Bio-based Europe Joint Undertaking (CBE)

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 2021 present fairly, in all material respects, the financial position of the CBE JU at 31 December 2021, 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

3.7.8. In our opinion, the revenue underlying the accounts for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.7.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme

The Circular Bio-based Europe Joint Undertaking (CBE)

corresponding to the ratio of their non-EU subsidised revenues to their total revenues¹⁰². As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, CBE (and its predecessor BBI) had not yet paid such contributions.

3.7.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure¹⁰³. For CBE this percentage share is 2.3 % or around €8 085 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations¹⁰⁴ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act¹⁰⁵, specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €175 756 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

¹⁰² Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

¹⁰³ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

¹⁰⁴ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

¹⁰⁵ Article 12 of Annex 1 to the Council Regulation (EU) No 560/2014, and Article 28 of Council Regulation (EU) 2021/2085.

The Circular Bio-based Europe Joint Undertaking (CBE)

Observations on budgetary management

Implementation of the Horizon 2020 budget

3.7.13. *Table 7.2* presents an overview of the members' contributions to the JU for the Horizon 2020 programme, at the end of 2021.

Table 7.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation and legal decisions)				Members' contributions (as at 31.12.2021)				
	JU activities (1)	Additional activities (2)	Reductions	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG RTD)	975.0	N/A	-140.0	835.0	728.2	N/A	N/A	N/A	728.2
Private members (in-kind contributions and cash contributions to administrative costs)	462.1	2 225.4	N/A	2 687.5	14.6	52.2	79.9	1 646.5	1 793.2
Private members (cash contributions to operational costs)	182.5	N/A	-140.0	42.5	3.3	N/A	N/A	N/A	3.3
Total	1 619.6	2 225.4	-280.0	3 565.0	746.0	52.2	79.9	1 646.5	2 524.6

(1) IKOP and administrative cost contribution targets as agreed in the JU's annual work plans.

(2) Additional activities are outside ECA's audit scope. Their minimum target of € 1 755 million was raised to € 2 225.4 for private members to achieve the total minimum contribution obligation of at least € 2 730 million.

Source: Data provided by the JU.

3.7.14. As regards the JU's operational obligations at the end of 2021, the JU had almost fully committed €815.8 million of the maximum EU contribution for signed Horizon 2020 grant agreements. Of this, around €159.6 million (or 19.6 %) remains to be paid in the coming years. On the other hand, the 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 H2020 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.

3.7.15. The implementation rate for the JU's 2021 payment budget available for Horizon 2020 projects was 71 %. This is mainly explained by suspensions and extensions of recent Horizon 2020 projects, necessary because of the COVID-19 pandemic, as well as the unexpected termination of a large Horizon 2020 project after the main beneficiary went bankrupt in 2021. The JU had no 2021 operational commitment appropriations as it had finished its last call for proposal by the end of 2020.

The Circular Bio-based Europe Joint Undertaking (CBE)

3.7.16. 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. 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. 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.

Observations on the management and control systems

3.7.17. For Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audit. Based on the ex-post audit results available by the end of 2021, the JU reported a representative error rate of 1.9 % and a residual error rate of 1.2 % for Horizon 2020 projects (clearings and final payments)¹⁰⁶.

3.7.18. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final beneficiaries, to corroborate the ex-post audit error rates¹⁰⁷. In one case, we found and quantified an error related to the direct personnel costs declared for a person who was neither employed by the beneficiary nor directly contracted for the project.

Follow-up of previous years' observations

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

¹⁰⁶ CBE JU 2021 Annual Activity Report, chapter 4.3.

¹⁰⁷ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

The Circular Bio-based Europe Joint Undertaking (CBE)

Annex – Follow-up of previous years' observations

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2019	The total amount of in-kind contributions to additional activities of €916 million at the end of 2019 included around €216 million of in-kind contributions reported for 2019, but for which the certification process had not been completed due to the COVID-19 pandemic.	Completed
2020	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. As in 2020, the industry members did not make any additional cash contributions to the JU operational costs, they remained at the same low level of €3.25 million, as at the end of 2019. This indicates that the JU encounters significant obstacles in obtaining such contributions and that the minimum target will not be achieved by the end of the Horizon 2020 programme. For this reason, the Commission's (DG RTD) reduced its cash contributions to the JU by €140 million. This significant reduction in members' contributions presented a risk to the achievement of the JU's research and innovation agenda for the Horizon 2020 programme.	N/A

The Circular Bio-based Europe Joint Undertaking (CBE)

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	By the end of 2020, the industry members' total in-kind contributions to additional activities only achieved 53 % of the minimum amount of €1 755 million, established in the JU's Founding Regulation. In addition, at the end of 2020, the industry members reported €95.7 million of in-kind contributions to operational activities out of the €433 million committed after all Horizon 2020 calls had been launched. This situation indicates a high risk that, by the end of the Horizon 2020 programme, the JU will not achieve the expected targets for its industry members' in-kind contributions as established in its founding regulation and adopted annual work plans.	Ongoing
2020	The design of the JU's 2020 call for proposals did not ensure the fullest coverage of the four strategic demonstration topics, in line with the JU's research agenda in the work plan. Eligible and high-scored proposals for one of the demonstration topics had to be rejected for the benefit of another demonstration topic, for which several proposals were accepted for co-financing.	N/A

Reply of the Joint Undertaking

3.7.11 and **3.7.12**

The CBE JU is open and willing to resolve the matter in cooperation with the Commission's services. JUs have collectively sought clarifications and guidance from the Commission with regard to the finding from ECA.

3.7.14

The resulting lower level of committed IKOP in grant agreements compared to the expected levels set in the Annual Work Programmes is mainly due to the fact that the CBE JU can only implement open calls for proposals, which resulted over time in increased co-funding of beneficiaries that are not part of the BIC consortium of private members of the CBE JU. As successful beneficiaries are not obliged to join the BIC consortium, the CBE JU could not consider their contributions for the achievement of the JU's IKOP target.

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

Introduction

3.8.1. The Shift2Rail (S2R) JU, located in Brussels, was set up in June 2014 under the Horizon 2020 programme for a period until 31 December 2024¹⁰⁸. In November 2021, the Council adopted the Single Basic Act, setting up [Europe's Rail \(EU-Rail\) JU](#) to replace S2R under the Horizon Europe programme for the period ending on 31 December 2031¹⁰⁹.

3.8.2. EU-Rail 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 (key stakeholders, including rail equipment manufacturers, railway companies, infrastructure managers and research centres).

3.8.3. [Table 8.1](#) presents key figures for the JU.

Table 8.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	42.7	72.5
Budget in new commitment appropriations (million euros)	1.2	77.9
Available payment budget (million euros) (1)	68.4	75.8
Available commitment budget (million euros) (1)	13.6	84.1
Total staff as at 31 December (2)	19	24

(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.

¹⁰⁸ Council Regulation (EU) No 642/2014 of 16 June 2014 establishing the Shift2Rail JU.

¹⁰⁹ Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe.

The Europe's Rail Joint Undertaking (EU-Rail)

Information in support of the statement of assurance

3.8.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.8.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page **151** 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 statements¹¹⁰ and the reports on the implementation of the budget¹¹¹ for the financial year ended 31 December 2021, 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).

¹¹⁰ 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.

¹¹¹ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The Europe's Rail Joint Undertaking (EU-Rail)

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 2021 present fairly, in all material respects, the financial position of the EU-Rail JU at 31 December 2021, 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

3.8.8. In our opinion, the revenue underlying the accounts for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.8.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme

The Europe's Rail Joint Undertaking (EU-Rail)

corresponding to the ratio of their non-EU subsidised revenues to their total revenues¹¹². As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, EU-Rail (and its predecessor S2R) had not yet paid such contributions.

3.8.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure¹¹³. For EU-Rail this percentage share is 3.8 % or around €10 445 per year (based on 2021 figures). This guidance only takes account of the respective provisions of the Staff Regulations¹¹⁴ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, the Single Basic Act¹¹⁵ specifies that administrative costs should be covered equally, on an annual basis between the EU and the other members, suggesting an employer contribution of around €137 435 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

¹¹² Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

¹¹³ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

¹¹⁴ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

¹¹⁵ Article 15 of Annex 1 to the Council Regulation (EU) No 642/2014, and Article 28 of Council Regulation (EU) 2021/2085.

The Europe's Rail Joint Undertaking (EU-Rail)

Observations on budgetary management**Implementation of the Horizon 2020 budget**

3.8.13. *Table 8.2* presents an overview of the members' contributions to the JU for the Horizon 2020 programme, at the end of 2021.

Table 8.2 – Members' contributions for Horizon 2020 (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2021)				
	JU activities	Additional activities (1)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG Move)	398.0	0.0	398.0	339.2	0.0	0.0	0.0	339.2
Private members	350.0	120.0	470.0	10.5	179.1	96.4	208.8	494.8
Total	748.0	120.0	868.0	349.7	179.1	96.4	208.8	834.0

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

Source: Data provided by the JU.

3.8.14. In April 2021, the JU launched a final open call for the Horizon 2020 programme, following the final amendment of the JU's annual work plan 2021, to complete the JU's Innovation Programme for "Technologies for Sustainable and Attractive European Freight". With this call, at the end of 2021, the JU had almost fully committed €385.5 million of the maximum EU contribution for signed Horizon 2020 grant agreements. Of this, around €96.4 million (or 25 %) remains to be paid in the coming years. On the other hand, the private members had legally committed to provide in-kind contributions of €572.6 million.

3.8.15. The JU implemented 100 % of its 2021 commitment budget available for Horizon 2020 projects. 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 to request from the beneficiaries, additional evidence confirming the achievement of the project results. Most of the JU's payments are lump-sums paid for project work packages that have been properly implemented by multiple beneficiaries. Consequently, the delay of a single beneficiary affects the payment of the whole lump-sum amount related to the work package.

The Europe's Rail Joint Undertaking (EU-Rail)

Observations on the management and control systems

3.8.16. For Horizon 2020 payments, the Common Audit Service of the Commission's DG RTD is responsible for the ex-post audit. Based on the ex-post audit results available at the end of 2021, the JU reported a representative error rate of 2.3 % and a residual error rate of 1.6 % for Horizon 2020 projects (clearings and final payments)¹¹⁶.

3.8.17. To assess the operational payment controls of the JU, we audited randomly sampled Horizon 2020 payments made in 2021, at the level of the final beneficiaries, to corroborate the ex-post audit error rates¹¹⁷. We found no errors or control weaknesses at the JU beneficiaries sampled.

Follow-up of previous years' observations

3.8.18. An overview of the corrective action taken in response to our observations from previous years is provided in the *Annex*.

¹¹⁶ EU-Rail JU Consolidated Annual Activity Report 2021, chapter 4.3.

¹¹⁷ Regarding the grant payment transactions tested at the beneficiaries, the reporting threshold for quantifiable errors is 1 % of the audited costs.

The Europe's Rail Joint Undertaking (EU-Rail)

Annex – Follow-up of previous years' observations

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	The Governing Board Decision 07/2018 adopting the rules on the prevention and management of conflicts of interests, applicable to the bodies of the JU, requires that up-to-date CVs and conflict of interest declarations of the JU's Governing Board members are published on the JU's website. However, as only a few of the Governing Board members duly submitted the information, none of the conflict of interest declarations and only half of the CVs could be published by the end of 2020.	Completed

Reply of the Joint Undertaking

3.8.12

EU-Rail agrees to pay its employer's pension contributions in line with the calculation to be provided by the Commission's services, once de-jure aspects are ascertained, and invoices are issued by the PMO. Although we have no mandate to accept that a contradiction exists between the estimation approach provided by Commission's services and the referenced provisions of the Single Basic Act (SBA), EU-Rail is open and willing to resolve the matter in cooperation with the Commission's services.

Article 28 of the SBA defines that the operational costs of a JU should be covered by means of the financial contributions by the EU and private members. In the view of the JU, this contradicts article 83(2) of the Staff regulations that bases the calculation of the EU bodies' (agencies') employer contribution to the EU pension scheme on revenues.

3.8.15

The JU in 2021 successfully made more than 70 payments related to operational tenders and grant agreements for a total amount of €39.3 million. The JU highlighted to the Governing Board (GB) the importance of the quality of the beneficiaries' reporting and the need for beneficiaries and/or contractors to comply with deadlines. It informed the GB in November 2021 that, due to the beneficiaries' delays in the submission of payment requests and underlying documents, payment appropriations of around EUR 17.5 million would remain unused at the year-end. Finally, the JU had to transfer this amount to the unused appropriations in order to be re-inscribed into the payment appropriations for 2022. It is the JU's view that with this reallocation it achieved an implementation rate for operational payments (Title 3) of 84 %.

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

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 2026¹¹⁸. It started working autonomously on 23 September 2020. In July 2021, the Council adopted a new founding Regulation extending the lifetime of the JU under the Multiannual Financial Framework (MFF) programme 2021-2027, for the period ending on 31 December 2033¹¹⁹.

3.9.2. EuroHPC is a public-private partnership, enabling the pooling of resources from the EU, participating countries and private partners for the development of high performance computing in Europe. Its founding members are the EU, represented by the Commission, the [Participating States](#), and two private partners, represented by the European Technology Platform for High Performance Computing (ETP4HPC) and the Big Data Value (BDVA) associations. At the end of 2021, the Governing Board of the JU accepted the membership request of a third private partner, the European Quantum Industry Consortium (QuIC).

¹¹⁸ Council Regulation (EU) 2018/1488 of 28 September 2018 establishing the European High Performance Computing JU.

¹¹⁹ Council Regulation (EU) 2021/1173 of 13 July 2021 establishing the European High Performance Computing JU and repealing Regulation (EU) 2018/1488.

The European High Performance Computing Joint Undertaking (EuroHPC)

3.9.3. *Table 9.1* presents key figures for the JU.

Table 9.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	207.5	181.5
Budget in new commitment appropriations (million euros)	722.4	509.1
Available payment budget (million euros) (1)	348.2	181.5
Available commitment budget (million euros) (1)	753.4	509.1
Total staff as at 31 December (2)	15	11

(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

3.9.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

3.9.5. Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) forms an integral part of the opinion.

The European High Performance Computing Joint Undertaking (EuroHPC)

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 statements¹²⁰ and the reports on the implementation of the budget¹²¹ for the financial year ended 31 December 2021, 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 2021 present fairly, in all material respects, the financial position of the EuroHPC JU at 31 December 2021, 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.

¹²⁰ 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.

¹²¹ The reports on implementation of the budget comprise the reports, which aggregate all budgetary operations and the explanatory notes.

The European High Performance Computing Joint Undertaking (EuroHPC)

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 for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

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

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.9.11. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme corresponding to the ratio of their non-EU subsidised revenues to their total revenues¹²². As the Commission has neither provided for this expenditure in the JUs' budgets nor formally requested the payments, EuroHPC had not yet paid such contributions.

3.9.12. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a

¹²² Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

The European High Performance Computing Joint Undertaking (EuroHPC)

percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure¹²³, cash contributions from Participating States, which are not channelled through the EU budget, also being considered as non-EU revenue. For EuroHPC this percentage share is 41.2 %. This guidance only takes account of the respective provisions of the Staff Regulations¹²⁴ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue. However, EuroHPC's Statutes¹²⁵ state that the EU should cover 100 % of the administrative costs of the JU. The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on budgetary management

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

3.9.13. *Table 9.2* presents an overview of the members' contributions to the JU for the Horizon 2020 and CEF programmes at the end of 2021.

¹²³ For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

¹²⁴ [Article 83a of Regulation No 31 \(EEC\), 11 \(EAEC\)](#) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

¹²⁵ [Recital 22 and Article 15 of Annex 1 to the Council Regulation \(EU\) 2021/1173](#).

The European High Performance Computing Joint Undertaking (EuroHPC)

Table 9.2 – Members’ contributions for Horizon 2020 and CEF (in € million)

Members	Members' contributions (as per Founding Regulation)			Members' contributions (as at 31.12.2021)				
	JU activities (1)	Additional activities (2)	Total	Cash	In-kind validated	In-kind reported not validated	In-kind to additional activities	Total
EU (DG CNECT)	536.0	N/A	536.0	307.0	0.0	0.0	N/A	307.0
Participating States	486.0	N/A	486.0	120.3	0.0	13.0	N/A	133.3
Private members	422.0	N/A	422.0	0.0	0.0	4.2	N/A	4.2
Total	1 444.0	N/A	1 444.0	427.3	0.0	17.2	N/A	444.5

(1) The EU contribution includes €100 million from the CEF programme.

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

Source: Data provided by the JU.

3.9.14. At the end of 2021, the private members had only reported €4.2 million of in-kind contributions. However, at this date, the JU had already fully committed €180 million for the 50 % co-financing of Horizon 2020 research and innovation grants, set as the minimum target in the JU's founding Regulation¹²⁶. The Participating States finance the remaining 50% of the total project costs and private partners only contribute on top of the maximum eligible costs of the grant actions. 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.

3.9.15. 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 €3.1 billion should be leveraged from the Participating States and €900 million from private members in form of cash and in-kind contributions. This represents a significant increase compared to the previous MFF programme under which the JU has to implement projects of around €1.4 billion. Therefore, the risk that the JU will not achieve the other members' contribution targets under the new founding Regulation is significantly increased.

3.9.16. 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 new 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

¹²⁶ Article 4(2) of the Council Regulation (EU) 2018/1488.

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Hosting Entities and supply issues for key components caused by the global pandemic situation in the constructions of the buildings (data centres), necessary to host and operate the already acquired supercomputers, also contributed to the low implementation rate.

3.9.17. The low implementation rate of the operational payment appropriations was mainly caused by the delayed start of some new infrastructure projects, resulting in a delay in pre-financing payments planned for 2021, as well as by the unexpected additional time needed for the ex-ante control work on deliverables, concerning the first interim grant payments for Horizon 2020 projects.

3.9.18. As regards the administrative commitment and payment appropriations (Title 1 and 2), the JU did not consider sufficiently in the planning of its 2021 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.

Observations on the management and control systems

The JU's internal control framework

3.9.19. 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 (as such, head of finance and administration and head of internal audit capability), the JU had not yet approved several important internal control actions within the 2021 deadlines set in its action plan. Despite the risks the JU is facing due to its increased budget, it only performed a simplified annual risk assessment exercise. By the end of 2021, the JU had not fully completed the development of a control and monitoring strategy nor a business continuity and IT security plan. These delays increased the JU's internal control risk for 2021.

The new centralised system to manage Participating States' financial contributions

3.9.20. Based on the Horizon Europe Framework Regulation and on the new EuroHPC's founding Regulation for the new 2021-2027 MFF, the JU is obliged to

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introduce a new centralised management process, the Central Management of Financial Contributions (CMFC) system, to manage the financial contributions of its Participating States.

3.9.21. Under the planned CMFC system, each Participating State can opt to pay to the JU its respective financial contributions at project level for beneficiaries established in its state. During this process, each Participating State also has a right of veto on all issues concerning the use of its own national financial contributions paid to the JU for applicants established in its state, in line with the EU's financial and competition rules. This allows a Participating State to decide, on the basis of national strategic priorities, whether or not to support a national beneficiary of a selected and approved research and innovation project.

3.9.22. On the other hand, the JU will have to execute the co-financing payments for all Participating States that chose to entrust the JU with their financial contributions. It will have to manage and monitor two alternative processes of supporting administrative agreements with Participating States. Each Participating State's National Funding Authority (NFA) has to sign an agreement with the JU, to either entrust the JU with the payment of national contributions, or to coordinate national transfer of funds agreements for the payments to beneficiaries and reporting on contributions. According to the JU's time line, the agreements should be signed before the JU signs its first model grant agreements for calls launched under the new MFF in late 2022.

3.9.23. We note that the additional resource needs for implementing the planned CMFC 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. This lack of planning in the introduction of the CMFC system combined with the staff situation, and the lack of IT tools and support may negatively affect the implementation of the JU's programmes and the achievement of the other members' contributions. If the CMFC must be managed manually, this will be human resource intensive.

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Observations on other issues

The JU's human resources situation

3.9.24. The precarious staff situation of the JU in 2020 worsened in 2021 due to the increased workload and despite the fact that the number of staff increased from 11 to 15 during the year. With a view of gaining a leading position in innovative high performance computing and quantum computing technologies, EuroHPC was significantly enlarged under the new 2021-2027 MFF. Under the new founding Regulation adopted in July 2021, the JU 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. Due to the delayed adoption of the new founding Regulation, the JU was only able to launch the necessary recruitment procedures late in 2021 and could not increase its staff during 2021. As the JU had only 15 staff members (four temporary staff and 11 contractual staff) at the end of 2021, it may face considerable human resource challenges in managing these new recruitments, in addition to the new administrative and operational processes yet to be established.

3.9.25. At the end of 2021, and as we observed in our 2020 audit report¹²⁷, the responsibility for two key positions (head of programmes and head of administration and finance) continued to be assumed by one person, the Senior Programme Officer. Furthermore, 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 the large infrastructure projects (acquisition and installation of supercomputers) under the previous and current MFF. A second experienced officer managed the ongoing actions, related to the Horizon 2020 calls 2019 to 2021 and the new Horizon Europe calls for proposals. The absence of key staff could have adverse effects on the JU's business continuity and the achievement of its objectives, in particular, given the highly technical nature of infrastructure projects for supercomputers, and the requirement for highly qualified staff with very specific knowledge.

¹²⁷ ECA 2020 annual report on EU Joint Undertakings, paragraph 3.9.17.

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Follow-up of previous years' observations

3.9.26. 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

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	At the end of 2020, delays in the recruitment of key staff together with the impact of the COVID-19 pandemic on planned costs for IT, communication, missions, meetings, events and other services, significantly reduced the implementation rates for administrative payment budget (representing around 1.5 % of the total available budget) down to 16.5 %.	Ongoing
2020	For 2020, the JU's operational payment budget was planned for the pre-financing related to the acquisition of the three precursor to supercomputers and five supercomputers (around €135 million) and for completed calls for proposals (around €44 million). However, at the end of 2020, pre-financing payments could only be made for the signed contracts related to the supercomputers LEONARDO and PetaSC, amounting to around €34 million, and for signed grant agreements, amounting to around €6 million. These resulted in a low implementation rate for operational payment appropriations of 22.6 %.	Completed
2020	The JU has set up reliable ex-ante control procedures based on financial and operational desk reviews. At the end of 2020, the JU implemented the Commission's internal control framework, which is based on 17 internal control principles, to a large extent. However, for the control principles related to risk assessment, and control and monitoring activities, the JU still needs to complete several actions to ensure their effective functioning.	Ongoing

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Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	At the end of 2020, the JU had neither developed reliable procedures for the validation and certification of in-kind contributions declared by its private members and Participating States, 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, to be made by these private members and Participating States.	Ongoing
2020	Given the JU's current workload concerning administrative and operational processes and the launching of its first important activities, we consider the JU to be currently understaffed. During the 2020 organisational setup, the JU mainly concentrated on ensuring the main operational processes and tasks, but neglected the need for administrative key staff, in particular, the head of administration and finance and the internal control and audit coordination manager. Without addressing this resource deficit, the JU risks encountering weaknesses in financial, budgetary and staff management, as well as in internal control processes for operational payments and in-kind contributions. Finally, the high proportion of contractual staff (74 %) may result in a significant level of staff turnover in the near future, further increasing the pressure on the JU's precarious staff situation.	Ongoing

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Reply of the Joint Undertaking

The Joint Undertaking has taken note of the ECA's report.



Joint Undertaking operating under EURATOM

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

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 years¹²⁸. 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, the Euratom Member States, as well as the United Kingdom, and Switzerland, which concluded a cooperation agreement with Euratom until 2020.

3.10.3. *Table 10.1* presents key figures for the JU.

Table 10.1 – Key figures for the JU

	2021	2020
Budget in new payment appropriations (million euros)	742.7	794.8
Budget in new commitment appropriations (million euros)	1 048.7	878.0
Available payment budget (million euros) (1)	764.8	816.5
Available commitment budget (million euros) (1)	1 069.9	885.7
Total staff as at 31 December (2)	441	435

(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.

¹²⁸ Council Decision 2007/198/Euratom of 27 March 2007 establishing the European JU for ITER and the Development of Fusion Energy and conferring advantages upon it.

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

Information in support of the statement of assurance

3.10.4. Our audit approach comprises analytical audit procedures, direct substantive testing of transactions at the JU and beneficiaries, and an assessment of key elements of the JU's supervisory and control systems. The results of this work were supplemented by evidence resulting from the work of other auditors and by an analysis of information provided by the JU's management.

Please refer to section 3.1 of the report for the description of the basis for our opinion, the responsibilities of management and those charged with governance and the auditor's responsibilities for the audit of the accounts and underlying transactions. The signature on page [151](#) 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

3.10.5. We have audited:

- (a) the accounts of the F4E JU, which comprise the financial statements¹²⁹ and the reports on the implementation of the budget¹³⁰ for the financial year ended 31 December 2021, 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).

¹²⁹ 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.

¹³⁰ 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

3.10.6. In our opinion, the accounts of the F4E JU for the year ended 31 December 2021 present fairly, in all material respects, the financial position of the F4E JU at 31 December 2021, 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

3.10.7. In our opinion, the revenue underlying the accounts for the year ended 31 December 2021 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 for the year ended 31 December 2021 are legal and regular in all material respects.

Emphasis of matters

3.10.9. Without calling into question the opinion expressed in paragraphs [3.10.6](#) and [3.10.8](#), we draw attention to paragraphs [3.10.12](#) to [3.10.13](#), which state that the F4E JU's annual accounts for the financial year 2021 disclose the F4E JU estimate of the total cost for completing its delivery obligations for the ITER project, assessed at €18.3 billion (in 2021 values). Changes in key assumptions for the estimate and risk exposure, however, could lead to significant costs increases or to further delays in the implementation of the ITER project.

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

Other matters

3.10.10. Without calling into question the opinion expressed in paragraph **3.10.6**, we draw attention to the fact that Russia is a member of the ITER-IO, with the obligations to deliver to the ITER assembly site in France (Cadarache) several components for the ITER projects and to provide annual contributions to the ITER-IO. Therefore, this presents a risk of further delays and increased costs for the ITER project.

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. The JU maintains an estimate of the total cost of completing its delivery obligations for the ITER project, the “estimate at completion” (EaC). This includes the costs of the construction and operational phase until 2035, as well as the decommissioning and deactivation phase until 2042. At the end of 2021, the JU assessed this total cost at €18.3 billion (in 2021 values). This consists of the total payments made at the end of 2021, amounting to €8.3 billion and the estimate of the future payments, assessed at €10 billion (in 2021 values).

3.10.13. Changes in key assumptions for the above estimate and in risk exposure, however, may lead to further cost increases and project delays. For 2021, the following events may have a significant impact on the EaC.

- New baseline for the ITER project: The EaC is based on the applicable ITER project baseline approved by the ITER Council in November 2016. The ITER Council, however, plans to adopt a new baseline in the first quarter 2023, which is expected to have a significant impact on the earliest possible, technically achievable date and consequently on the EaC estimate.
- Nuclear safety requirements: The French Nuclear Safety Authority (NSA) has the ultimate authority to approve any future changes in designs affecting the nuclear safety requirements. In this context, at the beginning of 2021, the JU formally applied for the NSA approval of the new welding design and technology related to the assembly of the components of the tokamak pit, being an irreversible process. Only in January 2022, did the NSA request additional information from the JU to finalise its analysis. While NSA approval is part of the ITER-IO’s normal assembly

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process, it may however, result in an additional delay of several months and thus affect the EaC; and

- o Cost estimate for the Hot Cell Complex: This has not been revised, and the current maturity stage of the ITER-IO design requirements does not allow F4E to prepare a reliable cost estimate.

Observations on the legality and regularity of transactions

JU's employer contributions to the EU pension scheme

3.10.14. Since January 2016, JUs which are only partly financed from the EU budget should pay the part of the employer's contributions to the EU pension scheme corresponding to the ratio of their non-EU subsidised revenues to their total revenues¹³¹. 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.

3.10.15. In line with the Commission's guidance to the JUs, communicating its position on the finding, the Commission's Office for Administration and Payment of Individual Entitlements should calculate the employer contribution for each JU as a percentage of the non-EU revenue related to the total revenue of the JU, including non-EU revenue for operational expenditure¹³². For F4E this percentage share was set at 21.6 % for the period 2017-2020 or around €5.8 million, and at 19.8 % for the year 2021 or around €1.5 million. This guidance only takes account of the respective provisions of the Staff Regulations¹³³ in determining the calculation method for the JUs' payments of employer contributions to the EU budget based on revenue.

¹³¹ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

¹³² For the purpose of simplification, the Commission proposed to estimate the JUs' employer pension contributions with a single percentage share for the whole life span of the JU, established on the basis of the EU and non-EU members' respective contributions foreseen in each JU's founding Regulation.

¹³³ Article 83a of Regulation No 31 (EEC), 11 (EAEC) laying down the Staff Regulations of Officials and the Conditions of Employment of Other Servants of the European Economic Community and the European Atomic Energy Community.

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However, the respective provisions of the F4E's Statutes¹³⁴ require that the total amount of membership contributions shall not exceed 10 % of the JU's annual administrative costs, suggesting an employer contribution of around €740 013 per year for the JU (based on 2021 figures). The concurrence of these different legal provisions risks the elaboration of diverse interpretations regarding the calculation of the JU's employer contribution, with varying financial impact.

Observations on the management and control systems

3.10.16. In 2021, the JU made changes to its organisational structure, in particular to the project management structure of the Antennas programme.

3.10.17. 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 in response to audits and assessments, in order to address the identified risks, resulted in an increase of the administrative burden, while it was not evident that the added controls were efficient and improved the system.

3.10.18. 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, which was confirmed by the JU's staff representatives and their formal letters, sent to the responsible Commissioners. The Commission (DG ENER) in its reply to the letters, has stated that the 2022 annual assessment of F4E will exclusively focus on human resource management matters and has encouraged F4E in using a 360-degree management assessment for its management team.

3.10.19. In response to the situation, the JU launched several actions to improve the working environment and wellbeing of staff. Those actions were integrated into a Change Agenda, targeting excessive workload, bad working atmosphere, and a lack of communication by the management on the planned organisational changes.

¹³⁴ Article 12 of the Statutes of F4E annexed to the F4E's Founding Regulation, and Article 2 and 3 of Annex II to the Statutes of F4E.

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

Follow-up of previous years' observations

3.10.20. 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

Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
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.	Ongoing
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. The JU's human resource management does not have up-to date information on the size of these resources, as its management is decentralised at unit or directorate level. 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.	Outstanding
2020	The JU assessed that the impact of the COVID-19 pandemic has been serious but not significant. By April 2021, the pandemic has caused delays of up to four months for some deliveries, with a resulting increase in costs of around €47 million (in 2008 values) for the overall ITER project. Further repercussions are possible should the pandemic worsen in 2021.	Ongoing
2020	Contrary to the ABAC workflow, the JU's Deviations Amendments and Contract Changes application cannot show that staff had properly understood the contents of a document and agreed to sign it with their personal signature.	Completed

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Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	<p>In its centralised authentication system for contract management, the JU created, in addition to individual user accounts, user group accounts with virtual identities to facilitate the management of its local IT applications. However, until the end of 2020, the functional group account created for the F4E Director was also used to approve and sign a variety of important documents. This practice is contrary to the basic principles of the JU's ICT access management policy that clearly requires user accounts to be unique and linked to a single user. It is therefore considered a critical internal control weakness, as it allows all persons included within the group account to perform actions, uniquely reserved for the RAO.</p>	Completed
2020	<p>The JU's framework of delegations has the objective of centralising the delegations to the responsible authorising officers, and among other things, it provides for an up-to-date overview of all approved delegations and deputising arrangements at F4E. However, at the end of 2020, the framework of the delegations in the JU's local IT applications did not automatically establish technical delegations (as such, user rights to authorise transactions) but instead, relied on each RAO to select the correct person to delegate to, based on the framework approved by the JU's Director. Moreover, delegation powers that are provided by the contracts (as such, to sign binding decisions under certain conditions) are given to JU staff, other than the RAO (as such, the responsible officers for contract). This is not reflected in the JU's framework of delegations.</p>	Completed

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Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	Finally, unlike the ABAC workflow, the Deviations Amendments and Contract Changes application has never been subject to an internal control audit, to ensure the compliance of user rights to authorise transactions with delegations assigned to staff. Consequently, there is a high risk that non-compliance due to breaches of the JU's delegation policy may not have been identified nor mitigated.	Completed
2020	Although in 2016, the JU started to use the Deviations Amendments and Contract Changes application for the legal commitment or contract management (in 2020 including for initial contracts), and therefore as an additional source for accounting and financial data, no validation of the JU's accounting system has been performed since 2013. This situation is contrary to the JU's Financial Regulation, requiring a validation of the accounting system, whenever a major change occurs.	Completed
2020	The JU's recruitment procedures made in 2020 lacked transparency in drawing up the final shortlist of candidates to be invited for the next assessment phase (interviews and written tests). In particular, it is not clear how the selection committee took account of the advantageous criteria for shortlisting candidates.	Completed
2020	The JU's calculation method for the 2020 annual membership contributions did not comply with the respective provisions of JU's Financial Regulation. Instead of using the contribution estimates as adopted by JU's Governing Board, the JU levied the contributions based on a yet to be adopted draft estimate.	Completed

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Year	ECA's comments	Status of corrective action (Completed / Ongoing / Outstanding / N/A)
2020	The JU uses its own e-Procurement portal, which is not fully synchronised with the Commission's eProcurement solution. Future enhancements of the F4E's eProcurement tool could lead to unnecessary duplication with the Commission's development efforts and investment. This would not support the principle of a single 'electronic data interchange area' for participants, as foreseen by the EU Financial Regulation.	N/A

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Reply of the Joint Undertaking

3.10.9

Please see reply to paragraph 3.10.13.

3.10.10

F4E is carefully following the situation. It is understood that Russia will do its utmost to find a solution to provide both its in-kind and in-cash contribution to ITER. The potential impact on schedule and cost cannot be quantified at this stage.

3.10.13

All three areas identified continue to carry both schedule and cost risk which are actively managed by F4E. Any changes in risk are tracked and communicated to the F4E Governing Board. It remains that there is a risk of further delay related to the difficulties encountered by the welding of Vacuum Vessel sectors, which are out of tolerances): mainly the delay in the releasing by the NSA of the Hold Point for the start of the welding activities and the delay in the welding operation itself if no proper repair is performed. For the Hot Cell (HC), F4E together with the Commission, is currently working to reduce as much as acceptable the requirements and specifications of the HC buildings. The cost will only be known with sufficient accuracy (Class 3) after the preliminary design has been performed.

3.10.14

F4E has not contributed to the EU pension scheme since 2016 as it has been assumed that the requirement to contribute only applies to EU bodies, which are financed by collecting fees or receive contributions from the private sector.

3.10.15

F4E will calculate the amount of employer's contribution to the pension scheme based on the guidelines of the DG Budget, and after having consulted DG Budget and DG Energy.

3.10.16

The implementation of a project-orientated matrix-organisation was initiated in 2011 in response to the demands of the Competitiveness Council of the European Union. The organisation has evolved along the last decade, with the further extension of the matrix structure in 2016 and the creation of the Project Management, Commercial and ITER-Delivery Departments. In 2019, the matrix structure was consolidated and optimised with the introduction of the Commercial Manager, the Project Manager and Program Manager functions. The Governing Board of F4E has set up a working group aiming at analysing the

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possible optimisation to the organizational structure to be presented to the new F4E Director for consideration.

3.10.17

Indeed, since 2015, F4E has implemented 711 actions, coming from internal audits (IAC and IAS), external auditors (ECA) and actions in response to the annual assessment of Governing Board. This meant in most of the cases, additional and more complex controls, but always in response to the recommendations of the independent assurance providers. Moreover, the internal control system and the implementation of recommendations has always been oversighted by the F4E's Audit Committee on behalf of the Governing Board. The current Internal Control Strategy, presented to the Audit Committee in June 2021, details the system and its elements.

The enhanced monitoring of the implementation of audit and assessment recommendations is made through its integration in the RAPID tool that was introduced in 2014. RAPID centralises the follow-up of all recommendations coming from the various assurance providers and avoids duplication and conflicting requirements.

Due to the improved coordination and response to recommendations and observations from the various assurance providers, the number of "in progress" recommendations and actions has significantly decreased over the years, showing progress in the functioning of the internal control system and its level of maturity. The improvement actions are also monitored by the F4E Improvement Steering Committee, introduced back in 2016, aiming at developing a coherent and coordinated improvement initiatives and optimisation.

3.10.19

It is important to underline that the novelty of our transformation effort lies in the holistic approach to the change needed.

This Report was adopted by Chamber IV, headed by Mr Mihails KOZLOVS, Member of the Court of Auditors, in Luxembourg at its meeting of 20 September 2022.

For the Court of Auditors

A handwritten signature in black ink, appearing to read 'K-H se', written in a cursive style.

Klaus-Heiner LEHNE

President

Abbreviations

ARTEMIS	The ARTEMIS Joint Undertaking to implement the Joint Technology Initiative in Embedded Computing Systems
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
CFS	Certificate on Financial Statement
Clean H2	The Clean Hydrogen Joint Undertaking
CMFC	Central Management of Financial Contributions
CS	The Clean Sky Joint Undertaking
GH	The Global Health Joint Undertaking (successor of the European and Developing Countries Clinical Trials Partnership 3)
DG CNECT	Directorate-General of the Commission for Communications Networks, Content and Technology
DG ENER	Directorate-General of the Commission for Energy
DG MOVE	Directorate-General of the Commission for Mobility and Transport
DG RTD	Directorate General of the Commission for Research and Innovation
EA	Executive Agency
ECCC	The European Cybersecurity Competence Centre
ECSEL	The Electronic Components and Systems Joint Undertaking
ENIAC	The European Nano-electronic Initiative Advisory Council
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
FTE	Full time equivalent
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
NFA	National Funding Authority
NSA	French Nuclear Safety Authority
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
TEN-T	Trans European Transport Network programme
TFEU	Treaty on the Functioning of the European Union

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