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Summary of results from the ECA's 2017 annual audit of the European research Joint Undertakings

Contents

	Paragraph
Introduction	1 - 10
Background information	1 - 2
Research Joint Undertakings – public-private partnerships of the EU with industry, research groups and Member States	3 - 5
Joint Undertakings’ budget	6 - 7
Audit approach	8 - 10
Audit results	11 - 44
“Clean” opinions on the reliability of the accounts for all JUs	11
“Clean” opinions on the legality and regularity of the underlying transactions for seven out of eight JUs	12 - 13
Emphasis of matter related to the EU contribution to the ITER project costs	14 - 19
Other comments	20 - 43
Follow-up of previous years’ comments	44
 Annex I – Joint Undertakings’ activities, budget and staff	
 Annex II – Joint Undertakings’ leverage ratios (Horizon 2020)	

INTRODUCTION

Background information

1. We audited and issued opinions on the reliability of the accounts and on the legality and regularity of the underlying transactions for the financial year ended 31 December 2017 for eight European research Joint Undertakings (JUs):

- F4E – Development of Fusion Energy;
- BBI – Bio-based Industries;
- CS – Clean Sky -Clean Air Transport Technologies;
- IMI – Innovative Medicines Initiative;
- FCH – Fuel Cells and Hydrogen;
- SESAR – Single European Sky Air Traffic Management Research;
- ECSEL – Electronic components and Systems;
- S2R - Shift2Rail Innovative Rail Product Solutions.

2. This document summarises the audit results published in our 2017 specific annual reports on the JUs and is not a separate audit report or opinion.

Research Joint Undertakings – public-private partnerships of the EU with industry, research groups and Member States

3. Joint Undertakings (JUs) are public-private partnerships, which play an important role in implementing specific aspects of European Union (EU) research policy. The public member of the JUs is the Commission representing the EU, the private members of the JUs include various public and private partners from industry and research groupings. All JUs, except ECSEL, follow a bipartite model with the participation of the Commission and private industry or research partners. ECSEL follows a tripartite model which also includes the participation of Member States.

4. The members make contributions to the funding of the Joint Undertakings' activities. On the one hand, the Commission is providing funds from the Seventh Research Framework

Programme (FP7) and Horizon 2020 Programme. Two JUs (SESAR and S2R) also received funding from the Trans-European Networks Transport programme (TEN-T). On the other hand, the industry and research partners provide in-kind contributions by implementing the JU's operational activities and cash contributions to administrative and operational costs of the Joint Undertakings.

5. In the case of four JUs (CS, FCH, BBI and S2R), the private members also have to provide a minimum amount of in-kind contributions to 'additional activities' which are activities outside the JUs' work programmes but fall within the scope of the JUs' objectives. ECA has no right to audit these contributions. Therefore, we can neither provide an opinion on their nature, quality and reality nor assess whether the industry members would have engaged in them anyway.

Joint Undertakings' budget

6. The total budget (payment appropriations) of the Joint Undertakings in 2017 was 2,1 billion euro (2016: 1,8 billion euro). The total in-kind and cash contributions from industry and research partners were expected to be of a similar amount at the end of the programme period. The Joint Undertakings employed 671 staff at the end of 2017 (2016: 633).

7. Information on the Joint Undertakings' area of activity, budget and staff numbers is shown in **Annex I**.

Audit approach

8. In line with Articles 208 (4) and 209 (2) of the EU financial regulation, for all JUs the audit of the reliability of the accounts is outsourced to independent external audit firms. In accordance with international auditing standards, we reviewed the quality of the work done by the 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' 2017 annual accounts.

9. Regarding the legality and regularity of underlying transactions, for each JU our audit comprised a substantive testing of representative samples of payment and revenue transactions, an analytical review of the main administrative and operational procedures

(grant, procurement and recruitment), as well as an assessment the JUs' supervisory and internal control systems. In addition, we reviewed a sample of ex-post audits finalised by independent external audit firms at the beneficiaries of FP7 grants and analysed the centralised ex-post audit system for Horizon 2020 payments at both the JUs and the DG RTD's Common Audit Service (CAS). Finally, we checked the completeness of JU's recovery process for the errors detected and the correctness of the error rate calculations.

10. For the seven Joint Undertakings implementing the Seventh Framework programme and the Horizon 2020 programme (SESAR, CS, FCH, IMI, ECSEL, S2R and BBI), the Commission completed in June 2017 evaluation reports on the Joint Undertakings' performance and added value for the Seventh Framework programme (FP7) and the Horizon 2020 programme. We analysed the interim and final evaluation results and the related action plan of the JUs.

AUDIT RESULTS

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

11. The final accounts of all JUs presented fairly, in all material respects, their financial position as at 31 December 2017 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.

“Clean” opinions on the legality and regularity of the underlying transactions for seven out of eight JUs

12. The transactions underlying the annual accounts for the year ended 31 December 2017 were legal and regular in all material respects for seven JUs (F4E, BBI, CS, IMI, FCH, SESAR and S2R).

13. As in the previous years, we issued a qualified opinion on the legality and regularity of the transactions underlying the accounts of the ECSEL Joint Undertaking. The significant variations in the methodologies and procedures used by the national funding authorities (NFAs) do not allow ECSEL to calculate a single reliable weighted error rate or a residual error rate. Therefore, we were not in a position to conclude whether the ex-post audits

provide sufficient assurance as to the legality and regularity of the underlying interim and final payments for FP7 projects managed by the JU. This issue is not relevant for the implementation of Horizon 2020 projects, as the Commission's Common Audit Service (CAS) is responsible for the ex-post audits.

Emphasis of matter related to the EU contribution to the ITER project costs

14. As in 2016, our audit opinion on the annual accounts of the F4E Joint Undertaking was accompanied by an emphasis of matter¹ related to the EU contribution to the ITER project costs.

15. In November 2016, the ITER Council endorsed a new schedule and cost estimate for the ITER project, setting December 2025 as the deadline for achieving the first strategic milestone of the construction phase ('First Plasma') and December 2035 as the estimated completion date for the whole construction phase, which is a delay of 15 years compared to the original planning.

16. Based on the new project baseline, the F4E Joint Undertaking recalculated the related cost at completion for the construction phase of the ITER project. The results were presented to the Joint Undertaking's Governing Board in December 2016 and estimated the additional EU funding requirement for the construction phase after 2020 at around 5,4 billion euro (82 % increase on the previously approved 6,6 billion euro).

17. Moreover, the F4E Joint Undertaking must also contribute to the ITER operational phase after 2035 and to the subsequent deactivation and decommissioning phases. The overall contribution to the operational phase after 2035 has not yet been estimated. The deactivation and decommissioning costs were estimated to be 95,5 and 180,2 million euro (in 2001 values).

18. We noted that the new time and cost estimates do not include contingencies. In June 2017, the Commission issued a communication on the EU contribution to the ITER

¹ 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.

project, suggesting that a contingency of up to 24 months in terms of time schedule and 10-20 % in terms of budget would be appropriate. Until a decision is taken by the EU Council, the 6,6 billion euro already adopted by the EU Council in 2010 serve as a ceiling for the JU's spending up to 2020. F4E took several measures to respect the threshold including postponing procurement and installation of components not essential for the First Plasma.

19. We consider that, while positive steps have been taken to improve the management and control of the ITER project construction phase, there remains a risk of further cost increases and delays in project implementation.

Other comments

20. Without calling our opinions into question, we made various comments in our specific annual reports on the JUs, in order to highlight matters of importance and indicate areas for improvement related to budgetary and financial management, internal controls, leverage of contributions, and evaluations by the Commission.

Shortcomings in the budget planning for payment appropriations

21. F4E had to increase significantly the 2017 payment appropriations planned in the initial budget (by around 284 million euro or 52 %) to cover its actual payment needs in 2017. This situation was due to serious shortcomings in the JU's budget planning process and affected the JU's 2018 budget.

22. In two cases (SESAR, IMI), the implementation rate for payment appropriations in 2017 was significantly lower than expected. For SESAR this was mainly due to delays in concluding Horizon 2020 grant agreements and the non-consideration of important assigned revenue stemming from recoveries for closed FP7 projects. For IMI, the low rate of budget implementation was mainly linked to a reduction and postponement of clinical trials within some large projects, and to delays in concluding grant agreements for closed calls under Horizon 2020. The fact that the JUs may re-enter unused payment appropriations from previous years into the budget of the next three years, together with a heavy budget planning process, has an increasingly negative impact on the JUs' budget implementation rates for payments.

Closing of the FP7 programme: JUs achieved an average implementation level of 87 %

23. We reported on the JUs' multi-annual budgetary implementation of the FP7 and TEN-T programmes (SESAR, CS, IMI, FCH, ECSEL).

24. Regarding the five JUs implementing FP7 activities (SESAR, CS, IMI, FCH, ECSEL), at the end of 2017 (closing phase of the FP7 programme), the EU had made actual total cash contributions to them of 3,1 billion euro out of the agreed maximum cash contributions of 3,6 billion euro. This shows that these JUs had achieved an average implementation level for their FP7 activities of about 87 %.

Midway through the Horizon 2020 programme: JUs showed implementing delays

25. We reported on the JUs' multi-annual budgetary implementation of the Horizon 2020 programme.

26. Regarding the seven JUs implementing Horizon 2020 activities (SESAR, CS, IMI, FCH, ECSEL, BBI, S2R), at the end of 2017 (mid-term of the Horizon 2020 programme), the EU actually contributed in cash 1,6 billion euro of the agreed total maximum EU cash contributions to all JUs implementing Horizon 2020 programme of 7,2 billion euro. This shows that these JUs currently achieved an average implementation level for their Horizon 2020 activities of about 23 %. The current implementation level for Horizon 2020 activities was lower for IMI (11 %) mainly caused by the long time required by project consortia to conclude Horizon 2020 grant agreements, and for BBI (15 %).

In-kind contributions to additional activities outside the JU work programme represented the largest part of the contributions from private members

27. By the end of 2017, the industry and research partners of the seven JUs implementing Horizon 2020 activities have actually contributed 2,9 billion euro or 39 % percent of the agreed total contributions of 7,5 billion euro. This amount is composed of 1 billion euro² of in-kind contributions to the JUs' Horizon 2020 own operational activities (34 %) and of

² Out of this amount only about 0,2 billion euro (20 %) were certified at the end of 2017.

1,9 billion euro of in-kind contributions to additional activities outside of the JUs' work programme (66 %). Despite of their importance, there is, however, no obligation to disclose the in-kind contributions to additional activities in the annual accounts and we have no mandate to audit them. Consequently, we cannot provide an opinion on their nature, quality and quantity (CS, FCH, BBI, S2R).

28. Regarding BBI, the Commission initiated in February 2017 an amendment of the BBI founding regulation in view to enable industry members also to provide their cash contributions at project level. However, there is a high risk that the industry members will not achieve the minimum amount of operational cash contributions (182,5 million euro) by the end of the programme.

29. Further information on multiannual budgetary implementation may be found in the JUs' 2017 annual activity report.

Internal controls for payments were generally effective and kept the error rates below materiality

30. The Joint Undertakings have set up reliable ex-ante control procedures based on financial and operational desk reviews. For FP7 interim and final payments, independent external audit firms contracted by the JUs perform ex-post audits at beneficiaries, whilst for Horizon 2020 cost claims the Commission's CAS is responsible for the ex-post audits at beneficiaries. All JUs effectively used these key controls for assessing the legality and regularity of the underlying payment transactions.

31. For FP7 grant payments, all the Joint Undertakings (except ECSEL) calculated and reported residual error rates below 2 % based on the ex-post audit results at the end of 2017. This was confirmed by our own substantive testing and the reviews of the work of the external audit firms.

32. For Horizon 2020 grant payments, only three out of the seven JUs implementing Horizon 2020 projects (CS, IMI, and SESAR) could calculate and report an error rate based on sufficient ex-post audits completed by CAS. For SESAR, the residual error rate for Horizon 2020 payments was 2,8 %. However, taking into account the rather low amount of total

Horizon 2020 payments compared to the total amount of SESAR payments in 2017, the overall residual error rate remained below materiality.

33. The remaining JUs (FCH, ECSEL, S2R, BBI) will have first ex-post audit results in 2018 as in 2017 their Horizon 2020 projects were still in an early implementation phase and their operational Horizon 2020 payments in 2017 were mainly pre-financings.

Weaknesses remain in the internal control and monitoring framework, procurement, grant and recruitment procedures

34. At the end of 2017, the Commission's common Horizon 2020 grant management and monitoring tools had not yet provided the specific developments needed for the processing of JUs' in kind contributions. This affected the internal control and monitoring framework of four JUs (CS, IMI, SESAR, S2R).

35. Several shortcomings in the application of the internal control standards were found in ECSEL, SESAR, and F4E. In ECSEL, the register of exception was not properly maintained. In SESAR, the departure of key staff and the subsequent work overload in the finance department caused financial control shortcomings. In F4E, significant shortcomings were found in the internal control and monitoring procedures related to the recruitment of a key management staff, follow-up on management's declarations on interests, as well as internal communication strategies which could not ensure the dissemination of appropriate financial information relevant for the annual accounts.

36. For three JUs (ECSEL, S2R, SESAR) some shortcomings were found in the management of 2017 procurement procedures.

37. For BBI weaknesses were found in the design and management of the 2016 grant call for proposals resulting in a low coverage (50 %) for the call topics in the area of research and innovation actions (RIA). Important RIA topics remained unfunded.

The JU's capacity to leverage contributions from private members for Horizon 2020

38. One of the main objectives and added value of the JUs is to leverage contributions from private industry and research members in the area of its activities over its lifespan

(10 years). As indicator for the JU's capacity to leverage contributions from private members, we used the minimum leverage ratio calculated on the basis of the member contributions as defined in the respective provisions of the JU's founding regulation³. For a reasonable level of leverage, the minimum contributions from private members to the JU's activities should at least match the EU's cash contribution.

39. ***Annex II*** gives an overview of the minimum leverage ratios for the seven JUs implementing Horizon 2020 activities. In the case of three JUs (CS, FCH, BBI) the founding regulation does not oblige private members to make a minimum of in-kind contributions to the operational activities of the JU. Consequently, for these JUs only one minimum leverage ratio including both the contributions to operational and additional activities was calculated.

The Commission's evaluations and the JUs' related action plans

40. In 2017, the Commission completed the final statutory evaluations of the JUs set up under the FP7 programme (SESAR, IMI, FCH, CS, ARTEMIS and ENIAC) and the interim statutory evaluations of the JUs set up under Horizon 2020 (SESAR, IMI2, CS2, FCH2, ECSEL, S2R, BBI).

41. The evaluations were carried out with the assistance of independent experts and covered their performance in terms of relevance, efficiency, effectiveness, coherence, and EU added value, with additional consideration of openness and transparency and research quality.

42. In October 2017, the Commission informed the European Parliament and Council on the evaluation results. Whilst the evaluators considered the JUs' performance in general as positive, they recommended: to increase the participation of industry, Member States, SMEs and other stakeholders; to improve the coordination with other EU and National Research Programmes; to increase the participation of the new Member States; to further develop an accountable Performance Measurement Framework with key performance indicators to

³ Minimum leverage ratio = total of minimum contributions of the private member as defined in the JU's founding regulation / maximum EU cash contribution to the JU as defined in the JU's founding regulation

better assess the JUs' impacts and socio-economic benefits; to improve dissemination and exploitation of the JUs' projects results.

43. In response, each JU prepared an action plan and started to implement it in 2018. During its 2018 financial audit, the ECA will follow-up the implementation of the JUs' action plans.

Follow-up of previous years' comments

44. In most cases, the JUs took corrective actions to follow-up to comments made in our specific annual reports of previous years. Details can be found in the annexes to our reports. Implementation of previous years' comments is still ongoing in ECSEL and F4E.

Annex I**Joint Undertakings' activities, budget and staff**

JOINT UNDERTAKING				Final Budget (million euro)		Staff (employed year end)	
	Parent DG	Policy Area	Main Activity	2017	2016	2017	2016
BBI	DG RTD	Research	Bio-based products and biofuels research and development	92	66	20	20
CLEAN SKY	DG RTD	Research	Aeronautical technologies research and development	244	288	41	41
ECSEL	DG CONNECT	Research	Electronic components and system research and innovation	290	244	29	29
F4E - FUSION FOR ENERGY	DG ENER	Research	Nuclear fusion energy research and development	865	720	447	415
FCH - FUEL CELLS AND HYDROGEN	DG RTD	Research	Fuel cells and hydrogen research and development	199	116	26	26
IMI - INNOVATIVE MEDICINES INITIATIVE	DG RTD	Research	Pharmaceutical research and development of innovative medicines	206	209	49	41
SESAR	DG MOVE	Research	Air traffic management system research and development	192	157	40	44
S2R- SHIFT2RAIL	DG MOVE	Research	Railway sector research and development	44	52	19	17
Total				2131	1852	671	633

Annex II

Joint Undertakings' leverage ratios (Horizon 2020)					
JOINT UNDERTAKING	Parent DG	Policy Area	Main Activity	Leverage ratio for operational activities	Leverage ratio for operational + additional activities
BBI	DG RTD	Research	Bio-based products and biofuels research and development	-	2,8
CLEAN SKY	DG RTD	Research	Aeronautical technologies research and development	-	1,25
ECSEL	DG CONNECT	Research	Electronic components and system research and innovation	1,42	1,42
FCH - FUEL CELLS AND HYDROGEN	DG RTD	Research	Fuel cells and hydrogen research and development	-	0,67
IMI - INNOVATIVE MEDICINES INITIATIVE	DG RTD	Research	Pharmaceutical research and development of innovative medicines	1	1
SESAR	DG MOVE	Research	Air traffic management system research and development	0,85	0,85
S2R- SHIFT2RAIL	DG MOVE	Research	Railway sector research and development	0,88	1,18