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COMMISSION STAFF WORKING DOCUMENT
EXECUTIVE SUMMARY OF THE EVALUATION

Interim evaluation of the 2021-2025 Euratom research and training programme

Accompanying the document

**REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE
COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE
COMMITTEE OF THE REGIONS**

Interim evaluation of the 2021-2025 Euratom research and training programme

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EXECUTIVE SUMMARY

The Staff Working Document provides support and evidence for the Commission's report on the interim evaluation of the Euratom Research and Training Programmes 2021-2025 ('the Programme').

The programme was launched in May 2021 with a total budget of EUR 1.38 billion. By December 2024, 79% of the budget had been committed and 40% of payments made. The programme is implemented in direct management through indirect and direct actions, which make up 61.5% and 38.5% of the budget respectively.

For indirect actions, 58 project grants were signed, with EUR 810 million in Euratom contributions, following three competitive calls for proposals and assessments of proposals from named beneficiaries. In addition, the Commission provided funding of EUR 2.6 million for postdoctoral fellowships under Maria Skłodowska Curie Actions (MSCAs) and for prizes recognising excellence in fission and fusion research.

For direct actions, the JRC budget (EUR 426 million for 2021-2024) is distributed across three main categories: permanent and non-permanent staff (making up over 63% of the budget), building maintenance (29%) and operational expenses for scientific work (8%).

The programme is successful in supporting pertinent research on nuclear safety, security, safeguards, radiation protection, waste management and fusion energy. It is too early to draw conclusions on the programme's impact – because only one project had been completed by 2024 and 10 more will be completed in 2025, out of 58 launched. However, available outcomes in terms of projects launched, their coverage and first results, as well as the JRC outputs, show that the programme's direct and indirect actions implemented over the last four years are relevant for achieving its objectives. The programme has delivered in terms of peer-reviewed publications (ca. 2 000) and the number of people who have benefited from training and access to research infrastructure (ca. 11 000).

Co-funded Euratom partnerships are the cornerstone of the programme, accounting for 76% of budget for indirect actions and involving most Member States (21 in waste management, 23 in radiation protection and 26 in fusion). The programme also made use of substantial funding from beneficiaries (45% of the costs) through partnerships. Progress made by partnerships is attracting more partners from non-EU countries; for instance, in radioactive waste the number of partners doubled.

Euratom-funded safety research is not limited to Member States that use nuclear power; 21 Member States are involved in different projects in this area. The programme also involves the Horizon Europe widening countries (14 out of 15 countries), benefiting from 13% of Euratom funding in fission research (an increase from 10% in 2014-2018). 'Widening countries' now account for 24% of participants in Euratom projects (an increase from 21% in 2014-2018).

Finally, reporting shows that projects launched in 2021 and 2022 reached 53% of their milestones. The data available at the time of writing shows that progress is being made in achieving the programme's objectives as explained in the sections below.

The research funded by the Euratom Programme helps Member States to develop a broad spectrum of applications of ionising radiation, while reducing the risks. Safety research is essential for those Member States that want to pursue nuclear energy as part of their energy mix, whether domestic or imported, and for those that need reassurance that nuclear power plants in neighbouring countries meet the highest safety standards. The public also stands to benefit from Euratom-funded research on other applications of ionising radiation, in particular in medicine.

Evaluation shows that Euratom financing is used in an optimal manner, avoiding unnecessary duplication while providing the required EU-added value, economies of scale, and coordination. In this respect, the Euratom programme remains a key part of the European research landscape.

The Euratom Programme effectively accommodates the diverse needs of all Member States, from small Member States with no civil nuclear programme and almost no nuclear research activities, to large Member States that rely heavily on nuclear power for their energy needs and are at the forefront of nuclear research. Even amongst the Member States with civil nuclear programmes, the level of maturity of these programmes, the technology underlying their reactor fleet, the strategic orientations for the future development and the research needs and interests can differ significantly. Considering these boundary conditions, the evaluation shows that the Euratom-supported actions match these needs.

In the area of nuclear safety, Euratom actions are well aligned with the needs of an ageing reactor fleet, addressing the inherent safety concerns arising from lifetime extension, as well as more generally improving knowledge of plant behaviour and performance and refining and developing new mitigation measures to respond to new risks as they appear (e.g. issues raised by the Fukushima accident).

Concerning research on advanced reactor systems, the Euratom programme has been focused on better understanding of safety implications arising from the development of advanced reactor concepts. Research priorities have been generally well focused on the most promising concepts being developed on the national level. The Programme also addressed the growing interest in small modular reactors (SMRs), by funding research on SMR, with particular focus on their safety features and passive safety systems.

The Euratom programme has also responded to the need and desire of Member States to better structure cooperative research activities, notably in the domain of safety and management of radioactive waste and in radiation protection, by further developing co-funded Partnerships in these fields.

Results of Euratom-funded research in fusion are not sufficient to bring fusion energy to the market in time to support EU decarbonisation efforts and to boost competitiveness. It is necessary to identify the critical issues and risks for making the fusion power plant that should drive the Euratom-funded research now and in the next years. The Programme must evolve to address the technology bottlenecks which require additional focus and investment while involving more private financing, industry experience and increasing the international collaboration with reliable partners where there is a clear added value for the EU. The Commission already initiated preparations of a co-programmed European Partnership in this field, bringing together stakeholders in the public and private sectors.

The JRC plays a particular role in the Euratom programme. Its four nuclear sites have provided expertise and facilities to half of the Euratom research projects launched since 2021. They also carry out their own highly relevant research, deliver training and produce analyses. This benefits Member States and provides policy support to the Commission on the whole spectrum of activities, from nuclear safety to security and safeguards. The evaluation highlighted the efforts to improve the JRC's overall efficiency, with the introduction of a new way of working based on portfolios. This has led to better integration of scientific activities. It also noted the implementation of a new nuclear strategy to improve infrastructure management, better cooperate with stakeholders and enhance communication.