EURATOM

RESEARCH AND TRAINING PROGRAMME OF THE EUROPEAN ATOMIC ENERGY COMMUNITY

PROPOSAL FOR A COUNCIL REGULATION establishing the Research and Training Programme of the European Atomic Energy Community, complementing Horizon Europe – the Framework Programme for Research and Innovation

COM(2018)437

Period of Application 2021 - 2025

RELEVANT WEBSITE FOR MORE INFORMATION

https://ec.europa.eu/programmes/horizon2020/en/h2020-section/euratom

FINANCIAL PROGRAMMING
(EUR MILLION)

2014-2020	2 368.9
2021	265.7
2022	270.7
2023	276.5
2024	281.2
2025	287.8
2026	293.8
2027	304.5
Total programming	1 980.3

IMPACT ASSESSMENT

SWD(2018) 307 final
https://europa.eu/!hv87Cf

Challenge

Nuclear research contributes to social well-being and economic prosperity by improving nuclear safety, security and radiation protection. Research and innovation in the nuclear field play a key role in maintaining the highest safety standards and Europe's competences in the nuclear domain. Radiation protection research leads to improvements in medical technologies as well as in other sectors (such as industry, agriculture, and environment) from which many citizens benefit. Nuclear research also supports the Union's efforts in the transition to a climate-neutral energy system.

Public and private research at national level has a significant role to play in this effort. *Euratom*'s task is to complement the Member States' contributions by means of a Community-based research and training programme.

Mission

Euratom supports nuclear research and training activities. The programme aims at enhancing nuclear safety, security and protection from ionising radiation, including through safe waste management and decommissioning activities. The Programme focuses also on the development of fusion energy, a long-term option for large-scale, low-carbon electricity production, which could help address a growing energy demand beyond 2050.. The Programme provides, through the Joint Research Centre (JRC), an important independent scientific advice in support of the implementation of European policies in the nuclear field. The Programme also seeks to strengthen the EU's nuclear competences and knowledge management, while expanding our knowledge base of fusion energy, and pursues improvements in the areas of education, training and access to research infrastructure.

Objectives

Euratom pursues the following specific objectives:

1. To improve and support nuclear safety, security, safeguards, radiation protection, safe spent fuel and radioactive waste management and decommissioning, including the safe and secure use of nuclear power and of non-power applications of ionizing radiation;
2. To maintain and further develop expertise and competence in the nuclear field within the Community;
3. To foster the development of fusion energy as a potential future energy source for electricity production and contribute to the implementation of the European fusion roadmap;
4. To support the policy of the Union on continuous improvement of nuclear safety, safeguards and security.

Actions

In 2021-25 actions for maintaining nuclear expertise and for supporting research for nuclear safety will remain a top priority of *Euratom* for direct and indirect actions, with particular emphasis on nuclear plants ageing, long-term operation strategies and accident management. The additional safety requirements introduced by the Nuclear Safety Directive require increased efforts in developing an understanding of degradation mechanisms of safety-relevant components and the impact on safety overall. This would support a science-based assessment of the safety margins and allow for timely implementation of safety improvements. The predictive tools and assessment methods developed by the programme would benefit the periodic safety reviews of existing nuclear installations. They would also help the regulators in assessing new designs.

Direct actions, implemented by the JRC, will focus as well on nuclear security and nuclear safeguards by developing techniques and methods aiming at reducing nuclear security risks and supporting nuclear non-proliferation efforts. In addition, the JRC will develop nuclear standards and support the implementation of *Euratom* policies in these areas.

For the development of fusion energy during 2021-2025, the co-funded European Partnership in fusion research will build on the progress made by the EUROfusion consortium (2014-2020), providing support for the efficient commencement of ITER's operations and, working hand-in-hand with industry, to increase the efforts on the conceptual design of a fusion power plant.

Delivery mode

The indirect actions (grants for research labs and universities) are implemented under the lead of Directorate-General for Research and Innovation. The Programme also supports direct actions undertaken by the JRC.

Link to 2014-2020 MFF

The 2021-2025 *Euratom* programme builds on its predecessor, the 2014-2020 Euratom Programme. Compared to its predecessor, the new programme has a single set of objectives for both direct and indirect actions, seeking to enhance synergies with Horizon Europe in particular in medical applications of radiation. It reinforces the education and training actions in nuclear field and opens Marie Skłodowska-Curie Actions (MSCA) for nuclear researchers.

Performance Framework

Improve and support nuclear safety, security, safeguards, radiation protection, safe spent fuel and radioactive waste management and decommissioning, including the safe and secure use of nuclear power and of non-power applications of ionizing radiation.

Indicator	Dimension measured	Type	Source	Data availability
Number of *Euratom*-funded peer reviewed scientific publications	1. High-quality new knowledge created	Output	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef.	First data in 2024; estimated lag 1 year; annually
Field-Weighted Citation Index of *Euratom*-funded peer reviewed publications	1. High-quality new knowledge created	Result	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef	First data in 2027; estimated lag 1 year; annually
Number and share of peer reviewed publications from *Euratom* Programme that are core contribution to scientific fields	1 High-quality new knowledge created	Impact	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef	First data in 2029; estimated lag 1 year; annually
Share of research outputs (open data/ publication/ software etc.) shared through open knowledge infrastructure	2. Diffusion of knowledge and Open Science	Output	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef, DataCite, Lens.org, and potentially webscraping and text mining of Company and media websites	First data in 2024; estimated lag 1 year; annually
Euratom direct actions additional indicator: Reference materials and data delivered and/or incorporated to a library	2. Diffusion of knowledge and Open Science	Output	PUBSY: JRC publications database	First data in 2022; estimated lag 1 year; annually
Share of open access research outputs actively used/cited	2. Diffusion of knowledge and Open Science	Result	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef, DataCite, Lens.org, and potentially webscraping and text mining of Company and media websites	First data in 2024; estimated lag 1 year; annually
Euratom direct actions additional indicator: Number of outputs contributing to modification of international standards	2. Diffusion of knowledge and Open Science	Result	PUBSY: JRC publications database	First data in 2024; estimated lag 1 year; annually
Share of *Euratom* beneficiaries having developed new transdisciplinary/ trans-sectoral collaborations with users of their open *Euratom* R&I outputs	2. Diffusion of knowledge and Open Science	Impact	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef, DataCite, Orbis, DealRoom, Lens.org, and potentially webscraping and text mining of Company and media websites	First data in 2026; estimated lag 1 year; annually

Number and share of outputs aimed at addressing specific EU policy priorities	3. EU policy priorities addressed through R&I	Output	CORDA	First data in 2022; estimated lag 1 year; annually
Euratom direct actions additional indicator: Number of service agreements in support of EU safeguards	3. EU policy priorities addressed through R&I	Output	JIPSY: JRC integrated processing system	First data in 2022; estimated lag 1 year; annually
Number and share of innovations and scientific results addressing specific EU policy priorities	3. EU policy priorities addressed through R&I	Result	CORDA	First data in 2024; estimated lag 1 year; annually
Euratom direct actions additional indicator: Number of technical systems provided	3. EU policy priorities addressed through R&I	Result	PUBSY: JRC publications database	First data in 2024; estimated lag 1 year; annually
Aggregated estimated effects from use of *Euratom*-funded results, on tackling specific EU policy priorities, including contribution to the policy and law-making cycle	3. EU policy priorities addressed through R&I	Impact	NEMESIS Model informed with CORDA and external sources	First data in 2027; estimated lag 1 year; annually
Euratom direct actions additional indicator: Number of training sessions delivered to nuclear inspectors and front-line officers	3. EU policy priorities addressed through R&I	Impact	PUBSY: JRC publications database	First data in 2022; estimated lag 1 year; annually
Number and share of *Euratom* projects where EU citizens and end-users contribute to the co-creation of R&I content.	4.Uptake of innovation in society	Output	CORDA	First data in 2022; estimated lag 1 year; annually
Number and share of beneficiary entities with citizen and end-users engagement mechanisms after *Euratom* project	4.Uptake of innovation in society	Result	CORDA, MoRRI indicators (PE5-7), as adjusted under SUPER MoRRI	First data in 2024; estimated lag 1 year; annually
Uptake and outreach of *Euratom* co-created scientific results and innovative solutions	4.Uptake of innovation in society	Impact	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef, Orbis	First data in 2027; estimated lag 1 year; annually

Maintain and further develop expertise and competence in nuclear field within the Community.

Indicator	Dimension measured	Type	Source	Data availability
Number of persons having benefitted from upskilling activities of the *Euratom* programme (through training, mobility and access to infrastructure)	5. Human capital in R&I supported	Output	CORDA, MORE3 and MORE4 data	First data in 2022; estimated lag 1 year; annually
Number and share of upskilled researchers (and other persons) with more influence in their field	5. Human capital in R&I supported	Result	CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef	First data in 2025; estimated lag 1 year; annually
Number and share of upskilled researchers with improved working conditions	5. Human capital in R&I supported	Impact	MORRI and MORE studies, CORDA, external sources such as OpenAire, Scopus, WOS, MAG, CrossRef	First data in 2027; estimated lag 1 year; annually

Number of innovative products, processes or methods from *Euratom* Programme (by type of innovation) & Intellectual Property Rights (IPR) applications	6. Innovation resulting from *Euratom* Programme	Output	CORDA, external sources such as PATSTAT, lens.org, LexisNexis, Clarivate analytics	First data in 2024; estimated lag 1 year; annually
Number of innovations from *Euratom* projects (by type of innovation) including from awarded IPRs	6. Innovation resulting from *Euratom* Programme	Result	CORDA, Horizon Results Platform, InnoRadar, external sources such as PATSTAT, lens.org, LexisNexis, Clarivate analytics, Orbis, and potentially webscraping and text mining of company and media websites	First data in 2025; estimated lag 1 year; annually
Creation, growth & market shares of companies having developed *Euratom* innovations	6. Innovation resulting from *Euratom* Programme	Impact	NEMESIS Model informed with CORDA and external sources and micromodelling based on Orbis data (Sharp RDD or DID)	First data in 2027; estimated lag 1 year; annually
Number of FTE jobs created, and jobs maintained in beneficiary entities for the *Euratom* project (by type of job)	7. Employment resulting from *Euratom* Programme	Output	CORDA	First data in 2022; estimated lag 1 year; annually
Increase of FTE jobs in beneficiary entities following *Euratom* project (by type of job)	7. Employment resulting from *Euratom* Programme	Result	CORDA, external sources such as ORBIS, Dealroom, Crunchbase, administrative microdata	First data in 2024; estimated lag 1 year; annually
Number of direct & indirect jobs created or maintained due to diffusion of *Euratom* results (by type of job)	7. Employment resulting from *Euratom* Programme	Impact	NEMESIS Model informed with CORDA and external sources	First data in 2026; estimated lag 1 year; annually
Amount of public & private investment mobilised with the initial *Euratom* investment	8. Leverage of investments in R&I	Output	CORDA	First data in 2022; estimated lag 1 year; annually
Amount of public & private investment mobilised to exploit or scale-up *Euratom* results	8. Leverage of investments in R&I	Result	Orbis Microeconometric modelling (sharp discontinuity design, DiD)	First data in 2024; estimated lag 1 year; annually
EU progress towards 3% GDP target due to *Euratom* Programme	8. Leverage of investments in R&I	Impact	NEMESIS Model informed with CORDA and external sources	First data in 2026; estimated lag 1 year; annually

Foster the development of fusion energy as a potential future energy source for electricity production and contribute to the implementation of the European fusion roadmap.

Indicator	Dimension	Type	Source	Data availability
Progress in the implementation of the fusion roadmap – Percentage of the fusion roadmap's milestones established for the period 2021-2025 reached by the *Euratom* Programme	9. Development of fusion energy	Result	Reporting from EUROfusion (co-funded European Partnership in fusion research)	First data in 2022; estimated lag 1 year; annually

Support the policy of the Union on nuclear safety, safeguards and security.

Indicator	Dimension	Type	Source	Data availability
Share of *Euratom* projects producing policy-relevant findings	10. EU policies on nuclear safety, safeguards and security supported	Output	JRC project Browser crossed with JRC Pubsy	First data in 2022; estimated lag 1 year; annually
Number of outputs having a demonstrable impact on the EU policy	10. EU policies on nuclear safety, safeguards and security supported	Result	JRC Productivity and Impact review	First data in 2025; estimated lag 1 year; annually
Number of policy items (Directives, Instruments, actions on the basis of *Euratom* Treaty articles) to which JRC provided effective and essential support in any part of the policy cycle)	10. EU policies on nuclear safety, safeguards and security supported	Impact	JRC Productivity and Impact review	First data in 2026; estimated lag 1 year; one year

Estimation of baselines and targets

Baseline	Existing indicators: as *Euratom* is still running, baseline cannot be directly extracted from the current figures. An extrapolation based on the available data is being developed to estimate as precisely as possible the baseline for this indicator. New indicators: the data for new indicators have not been collected from the 2014-2020 Programme. Non-zero baselines will be established based on data available from different sources.
Targets	Target value will be set once the baseline is determined. The target-setting methodology will be based on a mix of both quantitative and qualitative methods. It will take into consideration the results obtained so far from the 2014-2020 programme, other data sources, and the ambition of the 2021-2025 programme, while ensuring that the value is achievable and realistic.