The Euratom Work Programme 2021-2022

I. Structure and budget

The Euratom Research and Training Work Programme for 2021 and 2022 was published on 2 July 2021. All the details are published on the Commission Funding & Tender portal.

The WP is structured around 16 Topics described in a generic way and covering a large spectrum of activities. They are mid-way between top-down and bottom-up. The Commission gives in the same time guidance to researchers and freedom to the community.

The WP includes several 'Other Actions' with the first one on EUROFusion.

The WP general conditions and the Model Grant Agreement are aligned with Horizon Europe.

The recognition Prizes (the Nuclear Innovation Prize and SOFT for fusion) will promote excellence in nuclear research.

A large nuclear event (FISA-EURADWASTE) is planned with the French Presidency of the Council in the first half of 2022. The idea is to take stock and to exploit the results of the Euratom project results.

The Euratom WP 2021-2022 has a budget of 300 M€ with 200 M€ for Fusion and 100 M€ for Fission.

Euratom is at the forefront of implementation of actions with Member States with the new European Partnerships. As such, Euratom is perfectly in line with the objectives of the European Research Area aiming at better coordinating MS research.

75% of Euratom funding for indirect actions will be implemented via co-funded European Partnerships meaning in close cooperation and with strong commitment from MS.

100% of the Fusion budget is managed through the Co-fund Partnership EUROfusion.

In Fission, 25% of the budget is dedicated to two Partnerships, one on radioactive waste management (EURAD) and one on Radiation Protection.

II. Novelties in the WP 2021-2022

In addition to the traditional core business of Euratom that deals with fusion, nuclear safety, radioactive waste management and radiation protection, there are 4 novelties in the 2021-2022 WP:

1. Better synergies between direct and indirect Euratom actions, i.e. between JRC (Institutes in Karlsruhe, Petten, Geel and Ispra) and European projects. And better alignment with EU policies and in particular with DG ENER in charge of the 3 Euratom Directives that set requirements for nuclear safety, radioactive waste and spent fuel, as well as basic safety standards.

2. Bigger role played by non-power applications of ionising radiation. Increasing emphasis on development of medical and other non-power applications of nuclear sciences and technologies is demonstrated by 3 actions in this WP, accounting for a fourth of the call budget (Topics 9, 10 and 11).

   The Partnership in radiation protection and medical applications will establish synergies with the Horizon Europe's Cancer Mission and SAMIRA contributing to the Commission's 'Europe's Beating Cancer Plan' (Topic 9 with 30 M€ in total). Topic 10 aims to develop the 'Safe use and reliable supply of medical radionuclides' for fighting cancer (4 M€).

   The Innovation Action on Cross-sectoral synergies and new applications of nuclear technologies is dealing with closer to the market applications of nuclear technologies in various areas of industry, research, health, food and agriculture, environment, space and cultural heritage (Topic 11 with 10 M€).

3. In education and training, this WP takes decisive steps to ensure that the EU will maintain nuclear competencies through two E&T actions (Topics 12 and 13). In addition and in close collaboration with DG EAC, nuclear scientists will be eligible to participate in two MSCA calls for Postdoctoral Fellowships (2 M€).

4. A socio-economic Topic related to nuclear is addressing economic analysis, social acceptability, and engagement with stakeholders and citizens (Topic 14 with 1.5 M€).

III. Scientific and technical content

In Fusion, the WP sets a clear strategy for EUROfusion to ensure success of ITER and to move toward DEMO preparations. The future Partnership in fusion (close to 550 M€ for 2021-2025) will deliver the knowledge and the scientific teams, as well as support preparations of relevant facilities:

- DONES –DEMO oriented Neutron Source in Spain (Granada)
- DTT – Divertor Tokamak Test in Italy (Frascati)

The WP also pushes for industrial involvement and transfer of industrial expertise for DEMO. *De facto*, one of the main outcomes of the future EUROfusion is to prepare the European teams for the exploitation of ITER and training a new generation of fusion scientists and engineers.

In Fission, the bulk of the activities is on nuclear Safety, the core business of Euratom Research: Topics 1 to 5 address traditional nuclear power plants (cf. LTO -Long-term Operation of Gen II and Gen III reactors), advanced systems including for licencing safe future power plants (Topic 6 and 7 that cover both fission and fusion), research reactors, materials and fuels.

For the future and also looking at US, Russia, China, Japan and Korea as well as recent reports from NEA and IAEA, the Euratom WP opens the door to research on SMRs, small modular reactors (from 10 to 300 MWe). Due to their lower capital expenditures, SMRs may be

competitive to supply not only electricity but also for being used for district heating, desalination, industrial processes and hydrogen production. SMRs can also play an important role in integrated hybrid energy systems with high level of variable renewable energy shares. SMRs can be found mostly in Topics 2 and 4.

The objective of the WP is to maintain the highest safety standards, including a sufficient expertise in nuclear. Education and Training to attract and retain talents - a clear concern for Commissioner Gabriel and the nuclear community – are addressed in Topics 12 and 13 (16 M€):

a. 'A European facility for nuclear research' that supports access to and availability of research infrastructure for European nuclear scientists;
b. 'A European Nuclear competence area' that provides support for mobility and training schemes for next generation of scientists and engineers in fission research at BSc, MSc and PhD level.

IV. Third countries participation

Concerning international cooperation, at the date of the publication of the Euratom work programme (2 July 2021), there were no countries as yet associated to the Euratom Programme 2021-2025. Currently only Ukraine and United Kingdom are expected to become associated to Euratom. Therefore, entities established in those two countries will be treated as entities established in an Associated Country. In brief, yes for their participation but funding will depend from the signature (or not) of the Association Agreement.

V. The WP Process – Stakeholders, DGs and Member States

In-depth consultation with stakeholders took place through co-creation workshops with most of the actors in 2019 and beginning of 2020. At the end of 2020 and until January 2021, an open Web consultation on Euratom Research was launched and received more than 350 answers.

This WP was co-drafted with JRC and co-created with DG ENER. JRC will offer access to its infrastructure and expertise to research consortia. JRC will not receive money from the Euratom indirect actions. DG ENER is responsible for the three Directives on safety of nuclear installations (2009/71/Euratom), on radioactive waste and spent fuel (2011/70/Euratom) and on Radiation Protection (2013/59/Euratom). DG RTD organised two co-creation workshops with DG ENER in order to align research priorities with current policy needs. Examples of scientific support to policy can be found in EURAD for waste management and in CONCERT for radiation protection.

The WP was enriched through four meetings and rounds of comments from the Shadow Programme Committee representing the views of the Member States (11/1/2021, 8/2/2021,

22/3/2021, 3/5/2021). DG RTD addressed or answered to all of them, building a grand coalition supporting this WP.

Conclusions

This WP is a genuine European document (with Commission RTD, DG ENER, JRC highly involved and DG EAC for MCSA) reflecting well the different Member States interests through the Programme Committee.

The Euratom WP is preparing the future (ITER and DEMO), taking care of nuclear safety, addressing key innovative aspects (cf. SMRs and cross-sectorial issues), increasing the coordination with Member States through Partnerships and moving beyond traditional energy issues to tackle societal concerns like health and education.

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