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## Key points that FORATOM would like to emphasise in the context of the EC's Public Stakeholder Consultation on the Euratom Research and Training Programme

*The European Atomic Forum (FORATOM) is the Brussels-based trade association for the nuclear energy industry in Europe. The membership of FORATOM is made up of 15 national nuclear associations and through these associations, FORATOM represents nearly 800 European companies working in the industry and supporting around 800,000 jobs.*

In addition to the answers given in the associated on-line questionnaire, FORATOM would like to underline the following:

1. Nuclear power provides 27% of the European Union's electricity and nearly half of its low-carbon electricity. 14 of the 28 EU Member States are operating nuclear power plants and a further two Member States (Poland and Lithuania) have firm intentions to join or re-join this group.
2. Nuclear avoids annual EU emissions of approximately 680 Mt of CO<sub>2eq</sub>. At around 12 gCO<sub>2</sub>/kWh, nuclear lifecycle emissions are similar to those of wind power and less than one third of those from solar energy.
3. Nuclear will remain an important contributor to the achievement of the EU's climate change goals. The Paris Agreement of December 2015, with its collective aim to keep global temperature rise below 2°C, makes the deployment of nuclear energy indispensable. The IEA/NEA Technology Roadmap 2015 concludes that global nuclear capacity needs to more than double by 2050 if the 2°C ceiling is to be respected.
4. In order to maintain the EU share of nuclear electricity, a mixture of new build and long-term operation of existing NPPs will be needed. A **strong nuclear research and training capability** is essential to underpin these operations, with the following main priorities:
  - a. Development of new reactor concepts that are more efficient, more sustainable and more economic. These concepts should include small modular reactors (SMRs) as well as the fast reactor and cogeneration concepts targeted by the ESNII and NCII industrial initiatives
  - b. R&D to improve the safety and efficiency of current LWR reactors (coordinated by NUGENIA).
  - c. A better understanding of ageing phenomena and how to control and mitigate them
  - d. Improvements in materials for reactor components and fuel able to better withstand radiation and higher temperatures

- e. Development of waste management and disposal techniques for non-standard waste streams
  - f. Pursuance of partitioning & transmutation technology in order to reduce the long-term radiotoxicity of high-level radioactive waste. This in turn calls for development of new fuels containing significant levels of minor actinides.
  - g. Developments of new recycling technologies for fast reactor fuels containing higher levels of plutonium and minor actinides at higher burn-up
  - h. Maintenance of shared, large research infrastructures of common interest, which can be useful for training and encouraging researcher mobility
5. Achievement of these aims requires a significant level of investment in research facilities as well as in human resources and equipment. Development of new reactor concepts, in particular, demands the building of expensive pilot plants and ultimately demonstration reactors. The current level of funding in the Euratom Fission Programme, at around €50M/y, is patently out of tune with the EU's objective of maintaining European technological leadership in the nuclear field. The fact that nearly 20 times more funding under Horizon 2020 is allocated to research on non-nuclear energies does not, in our view, reflect the important part that nuclear must play in meeting the EU's decarbonisation objectives for 2030 and 2050. **FORATOM calls for a substantial increase in the level of EU funding for future Euratom research programmes.**
6. Research on safety improvements is an important and ongoing priority for the Euratom Programme. However, the nuclear industry regrets that the governance arrangements for approving new programmes mean that the non-nuclear Member States are effectively able to dictate that the Programme's objectives are limited only to safety, radioprotection and waste management. This was brought into sharp relief at the H2020 Nuclear Research Seminar in January 2013, where a minority of Member States led by Austria were able to command the Commission's attention in spite of calls from industry and nuclear research centres to prioritise research on future reactor systems and efficiency improvements as well as safety. The current governance arrangements, requiring unanimity for the approval of Euratom research programmes, are effectively preventing the EU collectively from pursuing the very goals set out in the Treaty!
7. FORATOM would like to reiterate that we fully support the conclusion of the latest Nuclear Illustrative Programme (PINC), published by the European Commission on 4 April 2016, that "the fast development of the use of nuclear energy outside the EU (China, India, etc) also calls for keeping our global leadership and excellence in the technological and safety areas, for which continuous investment and development activities will be essential".