

# EU NEEDS TO ALLOCATE MORE FUNDS TO NUCLEAR R&I

## FORATOM Position Paper

*Teodor Chirica, PhD*  
*FORATOM President*



*Bucharest, 06.09.2019*

# FORATOM: Who we are?

- **FORATOM acts as the voice of the European nuclear industry in energy policy discussions with EU Institutions & other key stakeholders**
- **The membership of FORATOM is made up of 15 national nuclear associations and two corporate members, representing more than 3,000 companies**
- Key topics approached by the WGs and TFs:
  - EU Energy Policies
  - Nuclear Technologies
  - Communication



126

REACTORI NUCLEARI  
IN EXPLOATARE

100

CIFRA DE AFACERI  
€ MLD./AN

1,100,000

LOCURI DE MUNCA

26%

PRODUCTIE  
ELECTRICITATE

50%

ELECTRICITATE CU  
EMISII REDUSE



# Key topics



## EU Energy Policy:

- Economics of nuclear
- EU energy mix
- Environment
- Euratom Treaty
- Security of energy supply
- Special projects - Brexit

## Nuclear technology:

- Nuclear safety
- Nuclear transport
- IRD
- Supply Chain
- Waste disposal

## Communication:

- Nuclear advocacy
- Perception of nuclear energy
- Promotion of nuclear energy
- Young generations in nuclear



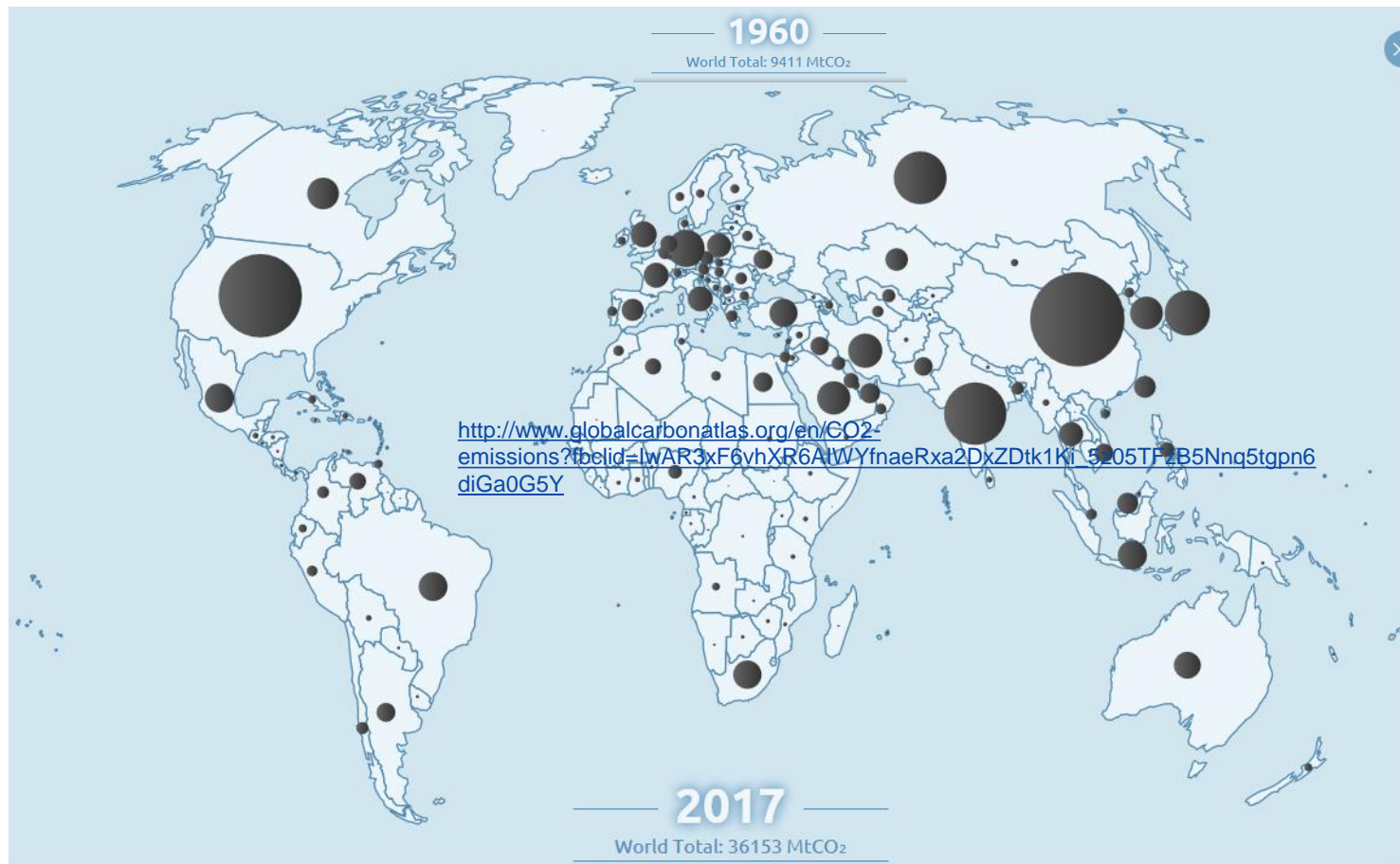




# NUCLEAR ENERGY AND CLIMATE CHANGES



# Pollution - the threat of the century



# Background (1)

---



- The Intergovernmental Panel on Climate Change (IPCC) report (Global Warming of 1.5°C, 8 October 2018) makes it clear that nuclear power is essential if the world is to keep global warming to below 1.5 degrees.

<http://ipcc.ch/sr15>

[https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15\\_Chapter2\\_Low\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter2_Low_Res.pdf)

[https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15\\_Chapter4\\_Low\\_Res.pdf](https://www.ipcc.ch/site/assets/uploads/sites/2/2019/02/SR15_Chapter4_Low_Res.pdf)

- According to the IEA (Nuclear Power in a Clean Energy System, 28 May 2019) a steep decline in nuclear power would threaten energy security and climate goals, and could result in billions of tonnes of additional carbon emissions.

<https://www.iea.org/publications/nuclear/>

- The European Commission's "A Clean Planet for All" strategic vision recognises that nuclear, together with renewables, will form the backbone of a carbon-free power sector in 2050.

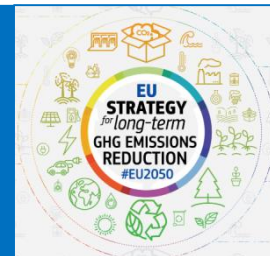


## Background (2)



### EC Communication\*:

*“Renewables together with nuclear energy will be the backbone of a carbon-free European power system”*



### EC in-depth analysis\*\*:

- 8 scenarios are contemplated – nuclear is part of each of them
- Nuclear will **remain an important component** in the EU 2050 energy mix
- Capacity of nuclear in 2050 – **between 99-121 GW**
- Share of nuclear in the electricity mix in 2050 – **ca. 15%**
- *“The consumption of **natural gas** is expected to be severely reduced by 2050 in all scenarios”*
- *“In the baseline, **hydrogen** use develops only as a niche application for road transport and industry”*

Authors of the strategy referred directly to the study commissioned by FORATOM

\* [https://ec.europa.eu/clima/sites/clima/files/docs/pages/com\\_2018\\_733\\_en.pdf](https://ec.europa.eu/clima/sites/clima/files/docs/pages/com_2018_733_en.pdf)

\*\* [https://ec.europa.eu/clima/sites/clima/files/docs/pages/com\\_2018\\_733\\_analysis\\_in\\_support\\_en\\_0.pdf](https://ec.europa.eu/clima/sites/clima/files/docs/pages/com_2018_733_analysis_in_support_en_0.pdf)

# Background (3)

---



- Several MSs have highlighted the contribution of nuclear power to achieving the EU's decarbonisation targets in their recently published draft National Energy and Climate Plans (NECPs).

<https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/governance-energy-union/national-energy-climate-plans>

- The R&I section of the Energy Union states that '*The EU should ensure that it maintains technological leadership in the nuclear domain (...) so as not to increase energy and technology dependence*'.

[https://setis.ec.europa.eu/system/files/Communication\\_Energy\\_Union\\_en.pdf](https://setis.ec.europa.eu/system/files/Communication_Energy_Union_en.pdf)

- This was developed furthermore in the Strategic Energy Technologies (SET) Plan, Action 104, Nuclear.

[https://setis.ec.europa.eu/system/files/integrated\\_set-plan/setplan\\_doi\\_nuclear-final.pdf](https://setis.ec.europa.eu/system/files/integrated_set-plan/setplan_doi_nuclear-final.pdf)

- The Nuclear Illustrative Programme6 (PINC), states that '*research and development is instrumental to maintain the EU at the forefront of nuclear technology (...) This implies continued investment on research and training/education, as well as on nuclear research infrastructure*'.

[https://ec.europa.eu/energy/sites/ener/files/documents/nuclear\\_illustrative\\_programme\\_pinc\\_-\\_may\\_2017\\_en.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/nuclear_illustrative_programme_pinc_-_may_2017_en.pdf)

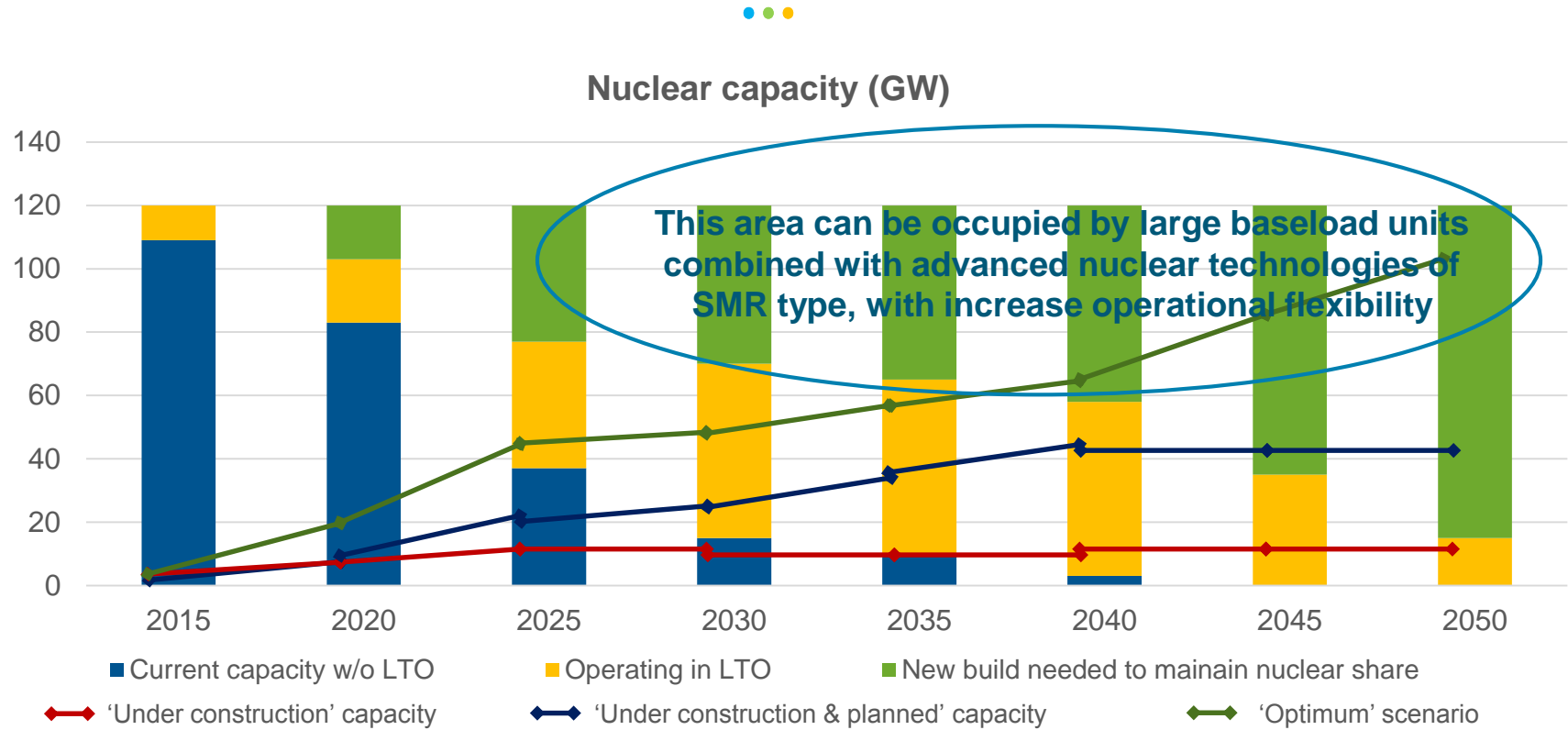


Euratom Research and Training (R&T) Programme 2021-2015





# Nuclear Illustrative Programme, PINC 2017



\*Source: PINC, European Commission, 2017,

[https://ec.europa.eu/energy/sites/ener/files/documents/nuclear\\_illustrative\\_programme\\_pinc\\_-\\_may\\_2017\\_en.pdf](https://ec.europa.eu/energy/sites/ener/files/documents/nuclear_illustrative_programme_pinc_-_may_2017_en.pdf)



# RESEARCH & INNOVATION CHALLENGES

# The EU is falling behind within the international context (1)



**Strategic areas for existing and future related technologies** Small Modular Reactors (SMR) and Accident Tolerant Fuel (ATF).

**over €1.1bn in 2019**



**R&D programmes & near-term innovation** (floating nuclear reactor technology, advanced fuel cycle programme, focusing on the full recycling of fuel)

**€1bn per year**



**Nuclear R&D** (SMRs, advanced materials manufacturing, digitalization, large nuclear systems & component testing facilities, advanced fuel R&D programmes)

**“Heavy investments” in R&D, but difficult to precisely estimate**



**?**

**Significantly less ambitious and of multiple orders of magnitude less than what is needed!!!**



# The EU is falling behind within the international context (2)

---



- **International counterparts are spending 10 times more, year on year, on nuclear R&I compared to the EU.** In terms of fission power generation R&I, some countries are spending up to 20-30 times more on specific topics.
- The EU cannot continue to hold '*technology leadership*' without a fundamental change to - and significant increase in - the amount devoted to EU nuclear R&I programmes and the priority focus areas.
- Cohesion and synergies in R&I funding among programmes could be one way of **increasing the level of investment and bringing it more in line with that of international counterparts.**
- While individual EU Member States and the private sector have vast funding and coordinated nuclear R&I programs, the EU also has to play its part to enable the strategic growth and innovation that is needed to support the EU's objectives.

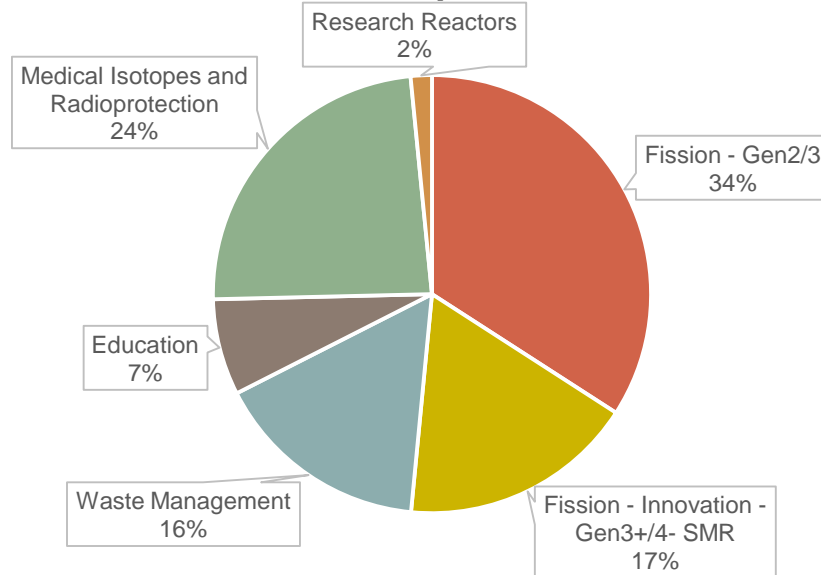


# Challenge: Expand value added R&D outside of Euratom



- Business as usual R&D funding & scope will not meet the needs of the EU nuclear industry
- Synergies with Horizon Europe must be delivered upon to allow support for forward looking R&D
- Areas such as Health & Materials are examples where Horizon Europe can lead common projects. Thus enable more available funds inside Euratom R&D to be focused on additional areas.

## Euratom R&D H2020 Ave Spend Over calls 2019-2020



**Just over half of the fission R&D budget is dedicated to fission power R&D projects:**

**~ €40-50m / year !!**





# Euratom Research and Training and Horizon Europe programmes (1)

---



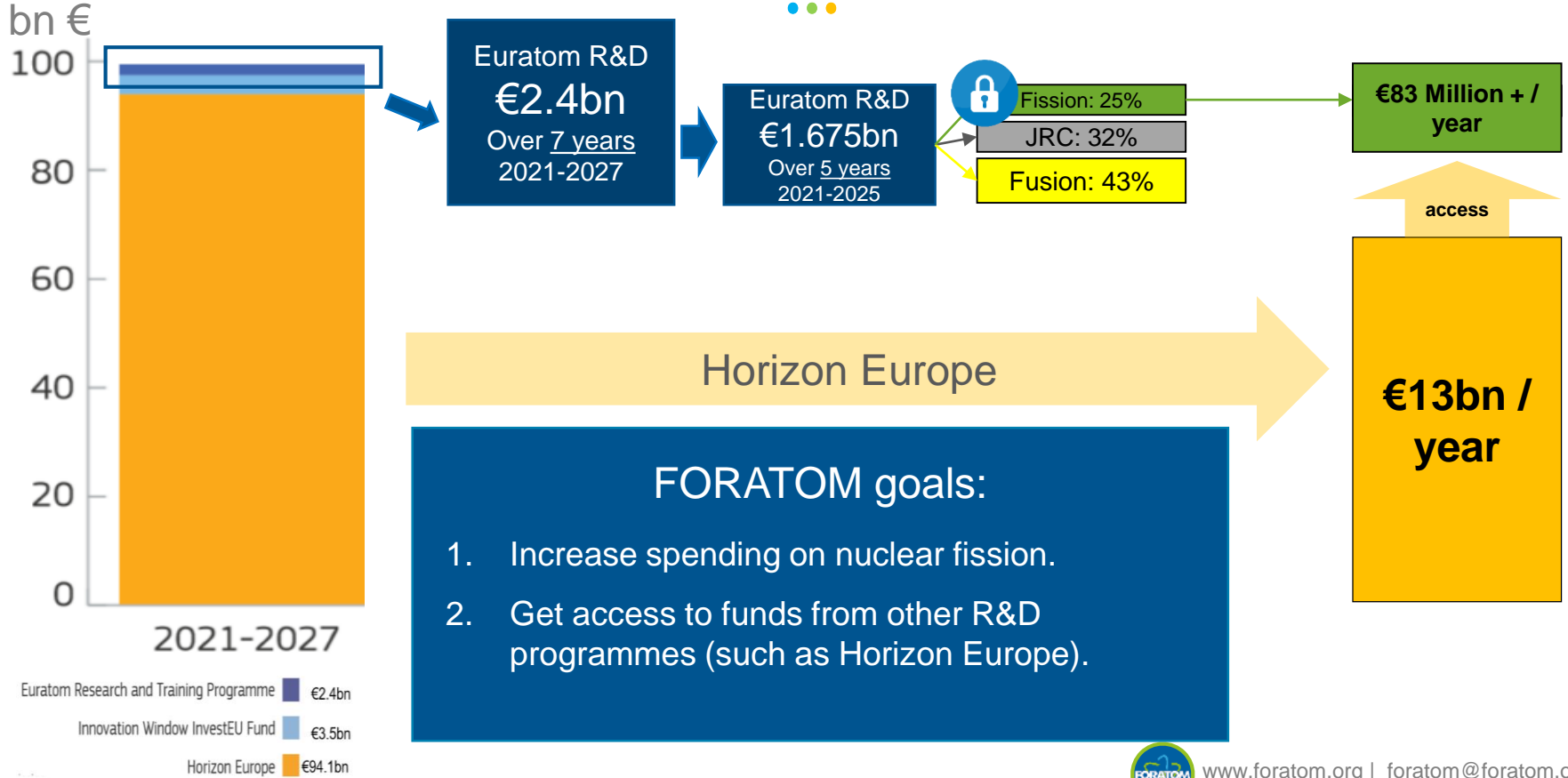
- The EU's new flagship R&I programme has a proposed budget of €100 Bn for 2021-2027 and includes Horizon Europe, InvestEU and the Euratom R&T programmes.
- Horizon Europe will be one of the most wide-reaching R&I programmes the EU has ever undertaken. Its budget is 25% higher than the current H2020 programme, potentially attaining nearly €120Bn by the time it is finally agreed as part of the Multi-annual Financial Framework (MFF).

[https://ec.europa.eu/research/horizon2020/pdf/press/fact\\_sheet\\_on\\_horizon2020\\_budget.pdf](https://ec.europa.eu/research/horizon2020/pdf/press/fact_sheet_on_horizon2020_budget.pdf)

- It covers five mission areas (adaptation to climate change; cancer; healthy oceans; climate-neutral and smart cities; food and soil health).
- Its aim is to **ensure systemic, cross-disciplinary and cross-sectorial** R&I in order to tackle challenges and trigger competitiveness.



# Euratom Research and Training and Horizon Europe programmes (2)



# Euratom Research and Training and Horizon Europe programmes (3)

---



- **The bulk of EU funding for nuclear R&D is essentially** constrained to the Euratom R&T programme. This can be resolved by making use of requirements for cohesion under the new Euratom 2021-2025 and the Horizon Europe programmes. Synergies must be found in order to fulfil R&I themes and missions.
- *‘Synergies with other future EU programmes and policies are still subject to further discussions depending on the progress made with other sectoral proposals within the EU’s long-term budget’*

EU budget for 2021-2027: Commission welcomes provisional agreement on Horizon Europe, the future EU research and innovation programme, EC Press Release, March 2019, [https://europa.eu/rapid/press-release\\_IP-19-1676\\_en.htm](https://europa.eu/rapid/press-release_IP-19-1676_en.htm)

- There are many challenges that can benefit from a **truly integrated EU R&I approach**. The EU must ensure that R&I funding leads to improvements in **key areas such as: security of energy supply, competitiveness, decarbonisation and environmental sustainability** across the EU.



# Euratom Research and Training and Horizon Europe programmes (4)

---



- The European Parliament has recommended **increasing funding for fission R&D to 25%** of the total budget for Euratom R&T (compared to the Commission's proposal of 20%), showing a willingness for greater investment in this field - in relation to the **Euratom Research agenda**, it has emphasised the need for synergies between EU funding programmes.
- FORATOM welcomes the EU's aim to make use of crossover R&I and provide the best value for investment to its citizens. **However, the current amount allocated to nuclear fission R&D** (covering existing nuclear reactors and near-term advanced technologies) **is far too little compared to what is really needed to meet the EU's decarbonisation, sustainability, energy security and competitiveness goals.**





## KEY POINTS





# Euratom Research and Training (R&T) Programme 2021-2025

---



[http://www.europarl.europa.eu/doceo/document/TA-8-2019-0028\\_EN.pdf?redirect](http://www.europarl.europa.eu/doceo/document/TA-8-2019-0028_EN.pdf?redirect)

## Key points

In line with the European Parliament deliberations on the Euratom Research & Training (R&T) programme 2021-2025, FORATOM calls for the following:

- **Priority must be given to investing in the development of technologies which will help the EU achieve its decarbonisation goals.** These include both existing and innovative nuclear technologies.
- **More EU funding should be allocated to nuclear research & innovation (R&I)** to avoid underinvestment in nuclear innovation and ensure that the European nuclear industry **holds international technology leadership.**
- **R&I funding must be allocated towards advancing the performance and efficiency of existing fission reactors in Europe,** a major component of a reliable low carbon electricity supply. This will contribute towards security of supply and reduce dependence on energy imports.
- **Synergies between Euratom R&T and Horizon Europe must be delivered,** ensuring access to cross-sectorial innovation projects and



- <https://www.foratom.org/downloads/eu-nuclear-research-and-innovation-in-collaboration-with-horizon-europe-missions/?wpdmdl=42862&refresh=5d6e2a403414e1567500864>
- [https://www.foratom.org/press-release/eu-needs-to-allocate-more-funds-to-nuclear-research-and-innovation/?fbclid=IwAR2\\_MoxNg6-n1Lf5QxXKdCazj4\\_5jzEyJzZjnmGIY-yIKI24cWFnNc9uHUM](https://www.foratom.org/press-release/eu-needs-to-allocate-more-funds-to-nuclear-research-and-innovation/?fbclid=IwAR2_MoxNg6-n1Lf5QxXKdCazj4_5jzEyJzZjnmGIY-yIKI24cWFnNc9uHUM)



## Q & A



**FORATOM**



**NUCLEARELECTRICA**