



**ANNUAL
REPORT
2018**



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MESSAGE

FROM OUR PRESIDENT

NUCLEAR IN A CHANGING WORLD

I am proud to announce that FORATOM will be organising the first edition of its NuclearEurope annual conference in Bucharest in June of this year. This event, which is being co-organised with the Romanian Nuclear Forum (ROMATOM), comes at the right moment. “Nuclear in a changing world” is the theme and it comes at a time when people are out on the streets calling for more to be done to tackle climate change.

In line with this, we are also seeing more and more Member States asking themselves whether they should actually be rethinking their nuclear policy. Indeed, some green MPs in countries such as Finland and Sweden are speaking out publicly in favour of nuclear indicating that the focus must be on reducing CO2 emissions and that, therefore, this means maintaining nuclear power within the energy mix.

INCREASED VISIBILITY

This conference forms part of a series of activities which we have been undertaking to render FORATOM, as the voice of the European nuclear industry, more visible. Over the course of 2018, events were held both in Brussels and abroad, including the US and Canada. Whilst many focused on the contribution of nuclear to the climate debate, discussions also centred around jobs, growth and security of supply.

Together with this, FORATOM has spoken out on a range of different topics. For example, how flexible nuclear power plants are the best partners for variable renewable energy sources. Or even the importance of the long-term operation of nuclear power plants.

LOOKING AHEAD

These activities are continuing over 2019, with, for example, the organisation of an event under the Romanian Presidency in February which focused on the long-term strategy to reduce CO2 emissions. Innovation is also an important topic for the industry – there is a lot going on in Europe and we need to make sure that policymakers are aware of the different projects and how they will provide solutions to a variety of challenges

Today, the European nuclear industry has a real opportunity to turn things around. First of all, there is the European Commission’s ‘A Clean Planet for All’ strategy which recognises nuclear as a low-carbon solution – could this mean that the EU may be more willing to consider nuclear a part of the solution for the future? We will have to wait and see what the new Commission and Parliament think about nuclear.

Secondly because, as I mentioned, people are starting to question whether coming out of nuclear is in fact a good idea given the challenges we face. We are seeing an increasing number of EU stakeholders start to speak out in our favour, including civil society representatives and the trade unions. And they are doing this because they recognise the multiple benefits offered by nuclear.

The time is right for the industry to reflect upon what policy is needed to ensure we go in the right direction.

Teodor Chirica

INTERNATIONAL CONFERENCE ON
**QUALITY,
LEADERSHIP AND
MANAGEMENT
IN THE NUCLEAR
INDUSTRY**



MESSAGE FROM OUR DIRECTOR GENERAL



THE EXPERTS AGREE: NUCLEAR IS ESSENTIAL IN THE FIGHT AGAINST CLIMATE CHANGE

2018 ended on a high for the nuclear industry. At international level, the IPCC made it clear that nuclear power is essential if the world is to keep global warming to below 1.5 degrees. The IEA also issued a stark warning to the EU that, whilst nuclear is a low-carbon source of baseload electricity capable of ensuring security of supply, current EU policies are discouraging investments in new nuclear power plants and the long-term operation of existing reactors and that this will make it more difficult for the EU to achieve its 2050 objectives. And the European Commission (EC) confirmed that nuclear will form the backbone of a carbon-free European power system, together with renewables.

FORATOM actively provided fact-based input to the discussions at EU level on how to decarbonise the European economy by 2050 over the course of the year. In this respect, it commissioned a study from FTI-CL Energy Consulting which looked into how nuclear could help the EU achieve its targets. The report showed that a 2050 nuclear capacity of 150GW will not only help decarbonise the power sector, it will also ensure security of supply at an affordable cost for consumers.

The question is how do we get there? In terms of policy, for example, it is essential that EU legislation is aligned with the goal of reducing CO₂ emissions, providing support for ALL low-carbon technologies. Industry too has to play its part, for example by looking into ways of reducing the costs of building new nuclear power plants.



BENEFITS OF NUCLEAR: CONTRIBUTING TO GROWTH AND JOBS IN EUROPE

FORATOM has engaged an external consultant to conduct a study which identifies exactly what the sector has to offer in terms of jobs and economic growth in Europe today and in 2050, taking into account the outcomes of the FTI-CL Energy Consulting study. Based on the information available, the nuclear industry has a lot to contribute in terms of employment.

Nevertheless, like many other industrial sectors, it is struggling to find the skilled workforce which it needs. As such, the industry is looking at ways in which it can render the industry more attractive to young people. It is also important to raise awareness about the fact that whilst some countries are reducing or coming out of nuclear, there are still plans for new construction, particularly in light of the climate targets. This shows that there is a future for the nuclear industry, and we must make sure that we get this message across to young people today and in the future.

THE ROAD AHEAD: CHALLENGES AND OPPORTUNITIES

Many political changes are expected in 2019, most notably Brexit, the election of a new European Parliament and the appointment of a new European Commission, all of which will change the EU landscape and potentially its attitude towards nuclear.

One key file which requires a lot of attention is the Sustainable Finance Initiative. Whilst we very much welcome the goal of closely aligning sustainable finance with national and international climate-related policies, we are concerned about attempts to limit financing to renewables only. Europe faces an enormous challenge if it wants to decarbonise its economy in the next 30 years. In order to stand a chance of achieving this, adequate financing and investment in ALL low-carbon technologies will be essential as only a combination of different solutions will address the issue. We are therefore actively working with EU stakeholders to ensure that such legislation is in line with the overall objective of reducing CO2 emissions to zero.

In the longer term, it is important for our industry to work together with decision makers to develop a policy framework conducive towards a significant nuclear new build programme.

Yves Desbazeille

THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY



WHO WE ARE

FORATOM is the Brussels-based trade association for the nuclear industry in Europe. It acts as the voice of the European nuclear industry in energy policy discussions with EU institutions and other key stakeholders.

The nuclear industry can only interact with international institutions and its representatives if the bridge between us and them is kept permanently open and continuously serves as a two-way channel for ideas, opinions and open debate. Continuous representation is crucial to FORATOM maintaining its status as a constructive and proactive dialogue partner for EU policy-makers.

WHAT WE DO

FORATOM provides information and expertise on the role of nuclear energy. We engage proactively at EU level on key nuclear matters by producing position papers, statements, newsfeeds, infographics, responses to public consultations and analyses of EU proposals and public opinion. We organise regular networking events such as dinner debates, workshops, one-to-one meetings, press briefings and visits to nuclear facilities.

Some of the key topics we deal with include security of energy supply, competitiveness, economics of nuclear, nuclear safety, nuclear liability, radioactive waste management, decommissioning, nuclear transport, environment, enabling factors for new nuclear projects, R&D, energy mix, non-proliferation, public opinion, Euratom Treaty and emergency preparedness.

OUR MEMBERS

The membership of FORATOM is made up of 15 national nuclear associations active across Europe and the companies that they represent, and two corporate members, the Polish energy group, PGE EJ1, and the Czech energy company, CEZ. More than 3,000 companies are represented, from Europe's (and the world's) largest nuclear utilities and nuclear fuel cycle companies to undertakings engaged in the transport of nuclear materials and the management of radioactive waste:

- Nuclear utilities
- Engineering companies
- Plant decommissioning companies
- Lawyers, consulting, insurance and service companies
- Uranium mining, milling and enrichment companies
- Nuclear fuel fabricators
- Spent nuclear fuel reprocessing companies
- Nuclear transporters
- Reactor and component vendors
- Waste management companies

MEMBER FORA

- Belgian Nuclear Forum
- Bulgarian Atomic Forum
- Finnish Energy Industries
- French Atomic Industrial Forum
- Hungarian Nuclear Forum
- Italian Nuclear Association
- Nucleair Nederland
- Nuclear Industry Association UK
- Romanian Atomic Forum
- Slovak Nuclear Forum
- Slovenian Nuclear Forum
- Spanish Nuclear Industry Forum
- Swedish Atomic Forum
- Swiss Nuclear Forum
- Ukrainian Nuclear Forum Association
- CEZ (Czech Republic) and PGE EJ1 (Poland) are Corporate Members

THE EXECUTIVE BOARD

The Executive Officers are appointed by the General Assembly for a period of two years:

- Ignacio Araluce, FINE, Spain
- Noël Camarcat, FAIF, France
- Teodor Chirica, ROMATOM, Romania
- Bertrand de L'Épinois, past President
- Peter Haslam, NIA, United Kingdom
- Esa Hyvärinen, ET, Finland
- Mats Ladeborn, SAFO, Sweden
- Robert Leclère, BNF, Belgium

MEET THE TEAM



Sophie Dayraut
Communications Officer



Danielle de Crombrughe-L.
Support Team Manager



Graziella De Riddere
IT Manager



Yves Desbazeille
Director General



Alexandre Ferrafiat
Legal & Economic Advisor



Nathalie Foriers
Assistant



Muriel Glibert
ENISS Manager



Andrei Goicea
Executive Manager



Jessica Johnson
Communications Director



Nathan Paterson
Sr Technology Advisor



Berta Picamal
Executive Advisor to the DG
Executive Manager



William Ranval
ENISS Director



Witold Strzelecki
Communications Manager



Aude Van Hille
Reception Assistant

11
LANGUAGES

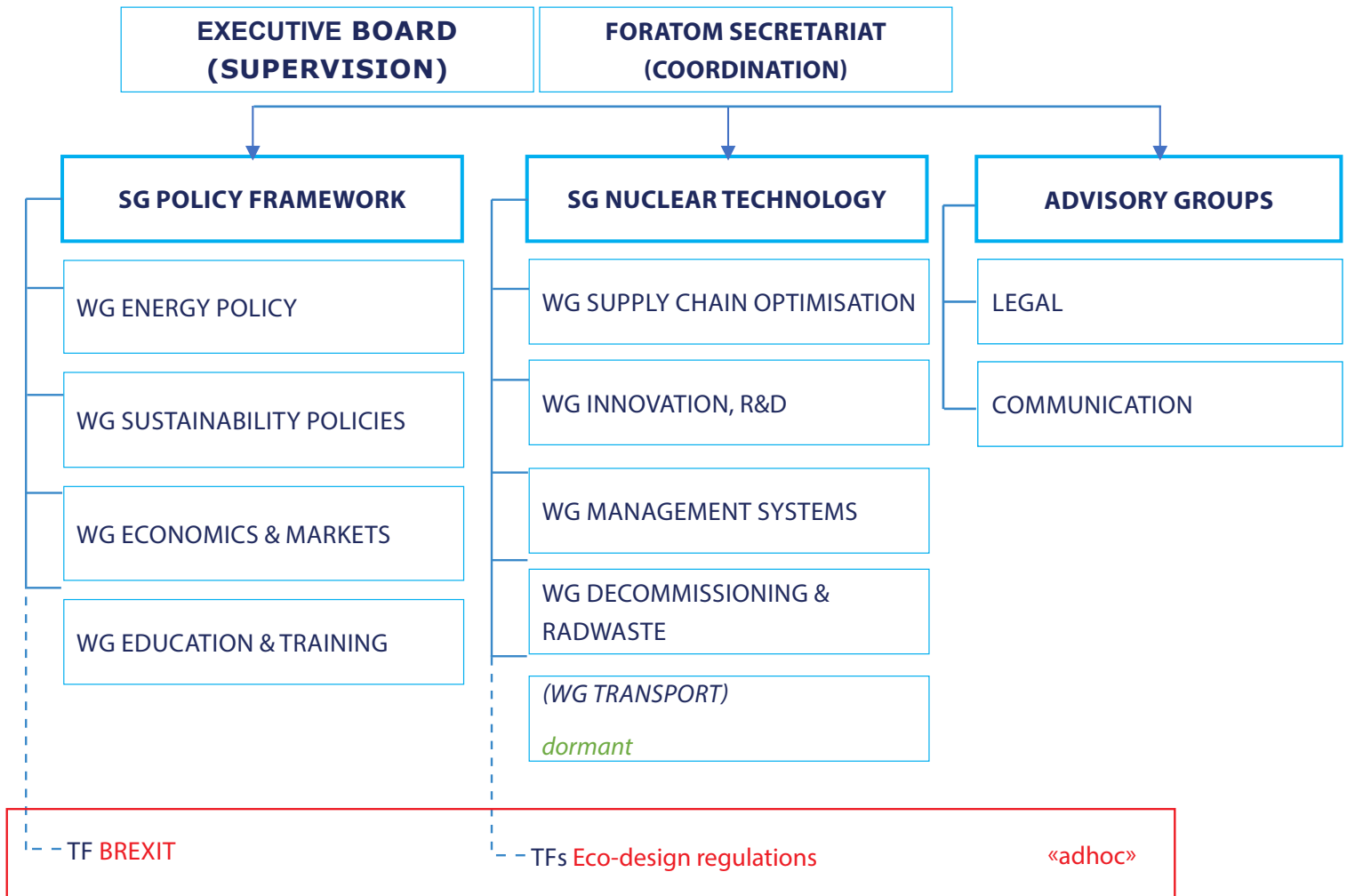
14
PEOPLE

10
AREAS OF
EXPERTISE

OUR WORKING GROUPS



FORATOM



ENISS

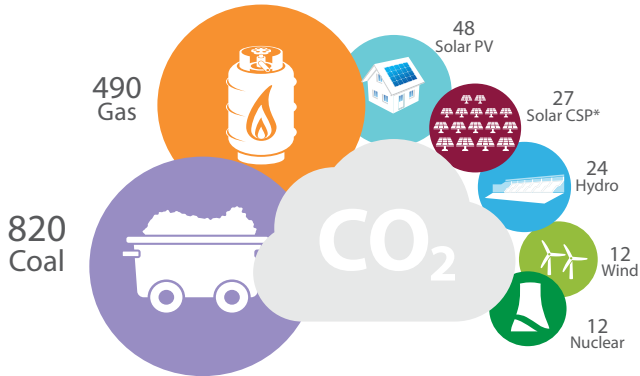


KEY FACTS & FIGURES



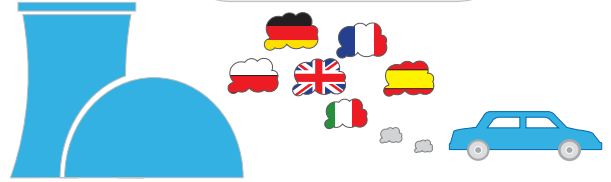
NUCLEAR - A TRULY SUSTAINABLE INDUSTRY

Comparison of greenhouse gas emissions (grammes CO₂ eq/kWh)



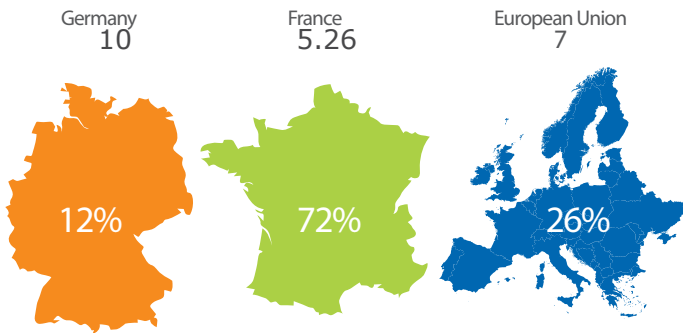
*Concentrated Solar Power
Source: IPCC 2014

The amount of emissions of CO₂eq that nuclear avoids is almost equivalent to that from road transport in France, Germany, UK, Italy, Spain and Poland.



Source: Eurostat 2014

CO₂ produced per capita (tonnes of CO₂/capita):



Nuclear share of electricity

*Including emissions from transport, industry, agriculture etc.

© FORATOM - Source: Eurostat 2018

Land required by different energy sources to match the amount of electricity produced by a 1,800 MW nuclear power plant.



© FORATOM - Source: Entergy Arkansas, Inc.

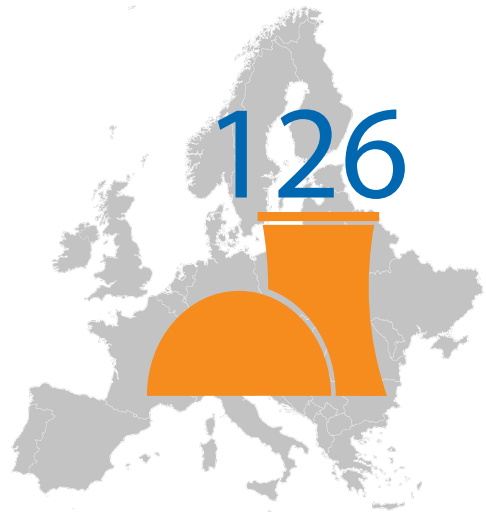
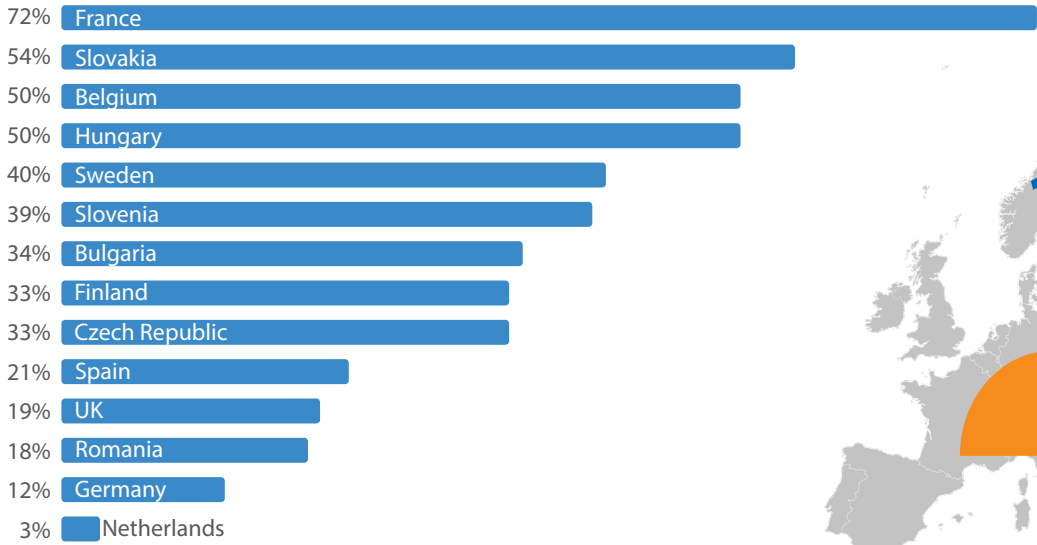


³IEA and OECD-NEA - [Projected Costs of Generating Electricity - 2010 Edition](#)

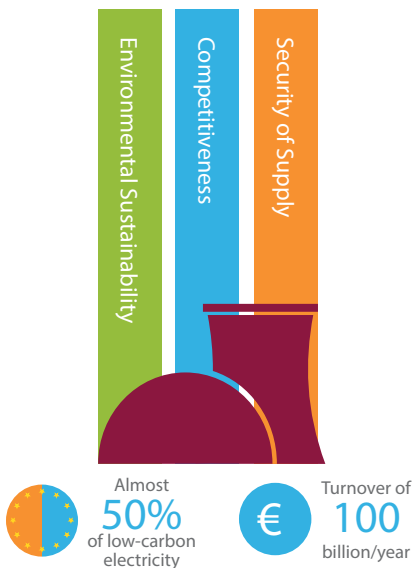
⁴William D. D'haeseleer - Study for the European Commission, DG Energy - [Synthesis on the Economics of Nuclear Energy](#)

⁵IEA and OECD-NEA - [Projected Costs of Generating Electricity - 2015 Edition](#)

14 COUNTRIES WITH 126 NUCLEAR REACTORS

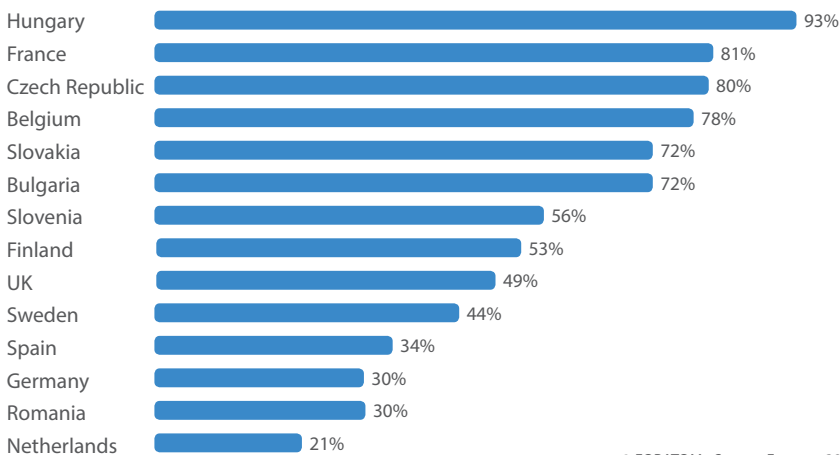


© FORATOM - Source: PRIS 2018

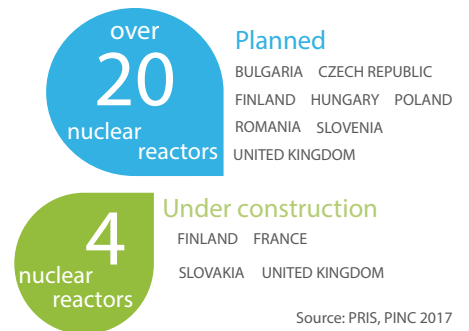


EU member states that either have nuclear new build plans, or have decided to extend the operational duration of reactors.

Nuclear share in low-carbon electricity by country



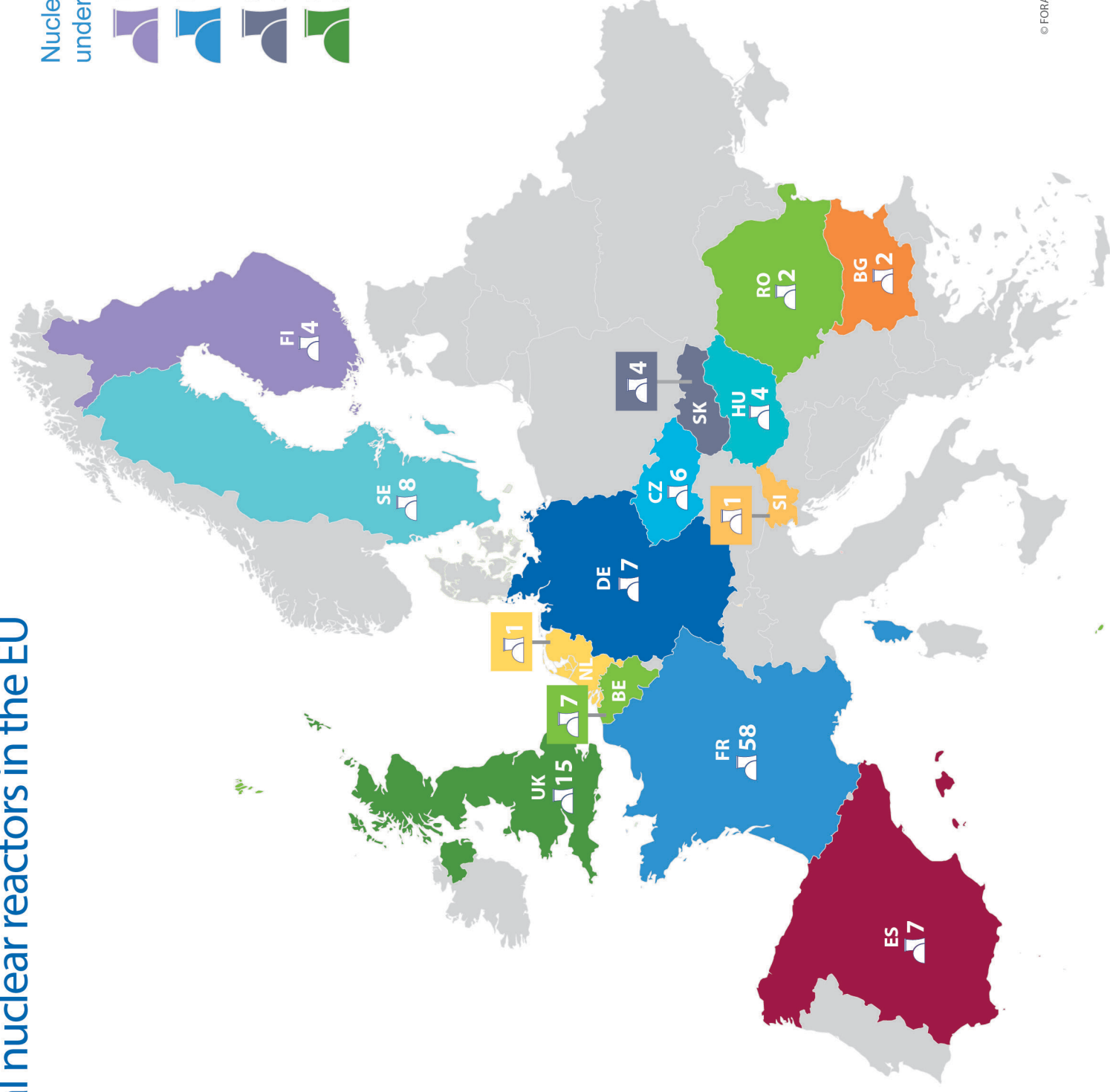
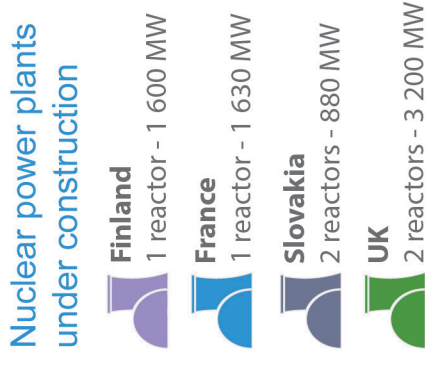
© FORATOM - Source: Eurostat 2018



Source: PRIS, PINC 2017

126 Operational nuclear reactors in the EU

Nuclear share of electricity



POLICY FOCUS



ENERGY & CLIMATE

On 28 November 2018, the European Commission released its communication entitled **“A Clean Planet for All”**. FORATOM was delighted to see that, in the Communication, the Commission recognises that nuclear will form the backbone of a 2050 carbon-free European power system, together with renewables.

Throughout the year, FORATOM remained an active stakeholder in discussions with the Commission, participating in workshops and responding to relevant consultations. The goal was to provide factual input on the role which nuclear can play in helping to decarbonise Europe’s power system. To do so, the association commissioned a study from FTI-CL Energy Consulting in order to assess how nuclear can help Europe reach its 2050 low-carbon targets. The results indicate that if Europe is serious about decarbonising its economy by 2050 then one quarter of the electricity produced in the EU will need to come from nuclear. This will ensure that citizens and industry have access to the low-carbon electricity they need – when they need it – and it will help to reduce the economic burden of the transition to a low-carbon economy on consumers.

This study was referenced in the in-depth analysis which accompanied the Commission communication. In this analysis document the Commission also notes that each Member State is free to choose its own energy mix, underlining that those which are investing in nuclear agree that it can contribute to security of energy supply, competitiveness and cleaner electricity production.

The Clean Energy Package, published on 30 November 2016, contains 8 legislative proposals which were discussed as part of the co-decision process in the European Parliament and Council in 2017 and 2018. Below is an overview of the three proposals most relevant to FORATOM.

After intense discussions during the Bulgarian Presidency, the **Governance of Energy Union Regulation** was adopted in early December and published in the Official Journal on 21 December 2018. The aim of this regulation is to guarantee reliable and transparent governance of the Energy Union. It should ensure policy coherence, investment certainty, improved coordination between Member States and reduce the administrative burden. However, when it comes to long-term investments, FORATOM does not believe that it will incentivise investment in low-carbon technologies. This is because it only promotes renewable technologies and energy efficiency policies which run the risk of disrupting energy markets without solving the real issue: decarbonisation of the sector.

The Energy Efficiency Directive was adopted in early December and published in the Official Journal on 21 December 2018. The approved text sets an energy efficiency target of 32.5% by 2030. To achieve this, it establishes a set of binding measures which require EU Member States to use energy more efficiently at all stages of the energy chain, from production to final consumption.

Discussions continued right up until the end of 2018 in relation to the **Internal Market for Electricity Regulation**. This proposal is one of four which aim to achieve a fully integrated electricity market and follows on from the outcome of the New Energy Market Design consultation which ran in 2015. The Council and the European Parliament reached an agreement on this file in mid-December and final adoption is expected during Q1 of 2019. FORATOM’s ultimate objective is to ensure that this regulation creates an effective market which encourages long-term investment in low-carbon technologies.

SUSTAINABILITY

Over the course of 2018, FORATOM has been working together with its members on the broad issue of sustainability. Indeed, nuclear energy has much to offer when it comes to environmental, economic and social sustainability.

At EU level, the Commission adopted a package of measures implementing several key actions relating to **sustainable finance** in May 2018. The package includes:

- A proposal for a regulation on the establishment of a framework to facilitate sustainable investment. This proposal is currently being discussed in trialogue.
- A proposal for a regulation on disclosures relating to sustainable investments and sustainability risks and amending Directive (EU)2016/2341. Trialogue discussions between the European Parliament, Council and Commission are ongoing in relation to this regulation.
- A proposal for a regulation amending the benchmark regulation. Trialogue discussions between the European Parliament, Council and Commission are ongoing in relation to this regulation.

Furthermore, it established a Technical Experts Group which will provide a series of recommendations to be taken into account in the drafting of the Delegated Acts by the European Commission.

Given that one of the main goals of the sustainable finance initiative is to identify which economic sectors can be considered as “environmentally sustainable” for investment purposes, FORATOM is actively engaging with stakeholders at EU level to ensure that such decisions are based on objective criteria, rather than a simple inclusion/exclusion list.

BREXIT

On 29 March 2017, the UK triggered Article 50 of the Treaty on the European Union confirming its decision to leave the EU. As a result, the UK will officially cease to be a member of the EU – as well as of the Euratom community – as of 31 October 2019.

In light of ongoing discussions about Brexit and implications for the nuclear industry both in the EU and the UK, FORATOM issued a paper on 2 May 2018 highlighting the most important topics to be considered in a future nuclear cooperation agreement between the EU and the UK that covers both pure Euratom matters, and also goes beyond the remits of the Euratom Treaty. The paper covers the EU Treaty and the single market, in particular the need for ensuring free trade of non-nuclear materials as well as free movement of nuclear workers.

Following on from this, FORATOM sent a letter to EU Chief Negotiator Michel Barnier in October 2018 concerning the issue of, on the one hand, existing contracts related to nuclear materials and associated products. The association is concerned that there may be a need to re-approve existing contracts post-Brexit. If that is the case, FORATOM called on the Commission to ensure that the sector is made aware of the review and re-approval process of relevant contracts and, most importantly, that these are done in a timely manner.

On the other hand, it is essential that the political declaration expected at the end of the year would explicitly mention the need for a continued cooperation on the civil uses of nuclear energy. Likewise, the association voiced the interests of the overall nuclear sector in discussions through Eurelectric’s work.

At the time of writing, everything still hinges on what the UK will finally decide to do in terms of Brexit as a whole.

ESPOO CONVENTION

The Meeting of the Parties to the Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention) have established an ad hoc working group to draft terms of reference for possible guidance on addressing the applicability of the Espoo Convention to decisions on the lifetime extension of nuclear power plants. Six topics are being discussed under this AHG:

- Extension of an existing licence or issuance of a new licence by a competent authority in the case of a time-limited licence.
- Are there particular factors or preconditions such as “physical works” for identifying lifetime extension as a proposed activity?
- Lifetime extension by specific domestic law.

NUCLEAR R&D

At the end of 2017, the European Commission published its proposal to **extend the Horizon 2020 Euratom Research Programme** for an additional two years (2019-2020). The proposal effectively maintained the scope of the previous five years, in line with the recommendations of the Interim Evaluation, but with a 20% increase in annual budget. The proposal was addressed to the Council only as Euratom matters do not go through the co-decision process, although both the European Parliament and the European Economic and Social Committee each issued an opinion on the proposal. The 2-year extension of the Euratom Research Programme was formally approved by Council on 9 October.

In February 2018, FORATOM responded to a public consultation on the future of Euratom research, calling for a strong programme with a significant increase in budget, and also echoing Commission calls for European leadership in nuclear research to be maintained. On 3 May 2018, the Commission announced its proposals for a new **EU Multi-annual Financial Framework (MFF)** for 2021-2027, indicating a planned 50%

- Likelihood of lifetime extension to cause significant adverse transboundary impact.
- Periodic safety review.
- Definition of “designed lifetime”.

FORATOM is involved as a stakeholder in this process, providing input on the six topics and participating in dedicated workshops that have taken place throughout the year. This issue has become an urgent one due to the fact that decisions concerning the need to apply Environmental Impact Assessments to Long-term Operations may be taken relatively soon. In cooperation with its members, FORATOM continues to monitor closely - and intervene when necessary in - the discussions.

increase overall for EU R&D. The new R&D framework programme is to be called **Horizon Europe**.

Following on from this, the Commission published a detailed proposal for the **new Horizon Europe Euratom Research Programme 2021-2025** on 7 June 2018. The proposed budget is €1.675 billion overall, divided into €725 million for fusion, €331 million for fission and €620 million for the Joint Research Center (JRC). The proposed budget for fission remains more or less the same compared to the previous H2020 Programme (€315 million). Here again, the decision lies with the Council, with both the Parliament and the European Economic and Social Committee issuing their own opinion. FORATOM remains actively involved in the process.

In 2019 FORATOM will analyse the opportunities for R&D synergies between Euratom 2021-2025 and Horizon Europe. A position paper will be developed to show international comparison of R&D funding in the nuclear sector and specific areas where new R&D policy and programmes should be developed at a pan-European level.

EU FUNDED PROJECTS



HORIZON 2020

The EU's Horizon 2020 research framework programme 2014-2020 has an overall budget of nearly €80 billion. Around €1.6 billion of this is dedicated to EU-funded research on nuclear issues, under the Euratom Treaty. The share of this allocated to nuclear fission & radioprotection indirect actions, i.e. open to nuclear industry participation, is €316 million from 2014-2018. A proposal to extend this to 2020 is in the pipeline.

The Euratom Work Programme for 2018 was published in October 2017 opening a new Call for Proposals with a deadline for submissions of September 2018. The EU budget for this call is €68,8 million, of which approximately €30 million will be dedicated to a new 5-year European Joint Programme on radioactive waste research.

On the following pages, you will find an overview of some of the EU funded projects in which FORATOM is involved.

RESEARCH & DEVELOPMENT

SPRINT - SNETP Programming for Research Innovation in Nuclear Technology: SPRINT provides support to the Sustainable Nuclear Energy Technology Platform (SNETP, see page 33 for more information). The project has four main objectives:

- Ensuring an inclusive and efficient process for producing strategic roadmaps.
- Improving the 'value proposal' of SNETP for the fission R&D community in Europe.
- Confirming SNETP as a key player within the international energy technology landscape.
- Enhancing the visibility and dialogue of SNETP towards a wider audience.

The project has been allocated a total budget of €600.000 and will last 48 months from May 2015.

RIMA (Robotics for Inspection and Maintenance): RIMA is a 4-year project which brings together 13 Digital Innovation Hubs (DIH) and industry associations to support the uptake of robotics – and help small and medium-sized companies (SMEs) to develop novel solutions for different industry sectors. RIMA will select 50 cross-border Technology Transfer & Technology Demonstrator Experiments through the Open Call application. A total of €8.1million funding will be distributed

to support these experiments during the project. The focus will be on Technology Transfer Experiments (TTEs) and Technology Demonstrators in the I&M robotics. Applicants are expected to form cross-border teams over a period of 6-14 months.

FORATOM is responsible for the calls relating to nuclear sector input and acts as a liaison on the various projects.

EDUCATION & TRAINING

ENEN+ - Attract, Retain and Develop New Nuclear Talents Beyond Academic Curricula: The second Horizon 2020 call for research proposals under the Euratom Programme, covering the years 2016 and 2017, resulted in 25 proposals being accepted with an EU contribution of €105 million. FORATOM is a partner in one of these projects related to education & training, “ENEN+”, which will run for three years from October 2017 with a total budget of €3.2 million. ENEN+'s primary goal is to trigger a revival of interest in careers in the nuclear industry amongst the young generation. It has five main objectives, namely:

- Attract new talent to a career in the nuclear industry
- Encourage students to go beyond the academic curricula
- Increase retention of attracted talents in nuclear careers
- Involve relevant stakeholders from the nuclear sector within EU and beyond
- Sustain this revived interest.

As a partner in this project, FORATOM has committed to developing a communications strategy aimed primarily towards both industry and policy makers. It will focus on ensuring that adequate emphasis is placed on attracting, developing and retaining nuclear talent.

ANNETTE - Advanced Networking for Nuclear Education, Training and Transfer of Expertise:

This project aims to promote a better coordination of academic and vocational learning initiatives in the nuclear field in Europe, in order to achieve a higher level of networking and cooperation. It includes Continuous Professional Development in nuclear within the framework of a coordinated pan-European effort, making use of e-learning and even Massive Open Online Courses (MOOCs). FORATOM acts as an advisor in relation to existing nuclear courses and improving the efficiency of education and training in the field of nuclear. The project will run for four years from January 2016 with a total budget of €3.18 million.

ELINDER - European Learning Initiatives for Nuclear Decommissioning and Environmental Remediation:

The overall aim of the current ELINDER project is to raise the interest of students and professionals and to stimulate careers in the important and emerging field of nuclear decommissioning and environmental remediation, by offering a set of attractive theoretical and practical learning opportunities. The outcome of this project will be translated into the development of a commonly qualified training programme in nuclear decommissioning between seven research facilities. As a partner in this project, FORATOM promotes training and support for ELINDER decommissioning training programme graduates by assisting them in the identification of internship opportunities in industrial enterprises active in nuclear decommissioning.

EUROPEAN NUCLEAR INSTALLATIONS SAFETY STANDARDS (ENISS)



ENISS represents the nuclear utilities and operating companies from 16 European countries with nuclear plants. ENISS provides the nuclear industry with the platform that it needs to exchange information on new national and European regulatory activities, to express its views and provide expert input on all aspects related to harmonization of safety standards. ENISS is the common channel through which European nuclear license holders interact with WENRA (nuclear regulators), the European Institutions and the International Atomic Energy Agency (IAEA).

Although ENISS is hosted by FORATOM, it enjoys a full autonomy as regards its strategy and priorities, which are discussed, approved and reviewed by its own supervisory bodies.

WESTERN EUROPEAN NUCLEAR REGULATORS ASSOCIATION (WENRA)

In 2018, ENISS had the opportunity to exchange views with WENRA on issues related to natural and internal hazards. Following a public consultation launched in November 2016, to which ENISS contributed, WENRA

published on 17 April 2018 an updated version of the report on Radioactive Waste Treatment and Conditioning Safety Reference Levels.

INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA)

ENISS provided comments throughout the year to the IAEA Draft Safety Requirements and Safety Guides, addressing the most important issues, namely NPP design and operation, management systems, safety, assessment, waste management, decommissioning and radiation protection. ENISS furthermore provided the IAEA with assistance in the technical/consultancy groups and participated, as an observer, in the Agency's Safety Standards Committees (SSCs) and the Nuclear Security Guidance Committee (NSGC).

The IAEA Commission on Safety Standards (CSS) - during its April 2018 meeting - endorsed the recommendations of the consultants' meeting of 14-16 February 2018 to consider the implications of the 2012 UNSCEAR Report "Attributing Health Effects

to Ionizing Radiation Exposure and Inferring Risks" for the development of IAEA safety standards.

The IAEA CSS asked all SSCs to undertake a review of IAEA Safety Fundamentals, SF-1, and to identify whether there is a need to refine certain parts. ENISS developed a written statement setting forth the grounds and main arguments against a revision of SF-1.

The IAEA is currently revising the INES Scale User's Manual with the view of refining the rating criteria, incorporating the lessons learned from Fukushima and reassessing the effectiveness of INES as a communication tool. In May 2018, within the framework of the manual's revision, ENISS had the opportunity to provide its views and submitted comments.

INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP)

ENISS participated in the sixth meeting of Senior Representatives of Organisations in Formal Relations with ICRP which took place in Stockholm on 16 October 2018. This year's meeting discussion focused on one topic, "The system of radiological protection: areas

needing further consideration". ENISS also responded to the ICRP consultation on the draft report entitled "The Use of Effective Dose as a Radiological Protection Quantity".

ENSREG

The topical peer review of the 'Ageing management of nuclear power plants' was launched in February 2017. This was the first in a series of peer reviews that will take place every six years, in accordance with the EU's revised Nuclear Safety Directive. All 16 EU States with operating NPPs along with Switzerland, Norway and Ukraine took part in the peer review exercise. National assessment reports prepared by the national nuclear regulators with the support of their licensees were published at the end of 2017 and were subject to public consultation from January to February 2018.

On 3 May 2018, ENSREG organised a first public meeting to present and discuss the peer review process, the

progress made thus far, and the way forward. ENISS was invited to share the industry's views and expectations. ENISS was also invited to attend as observer the peer review workshop that took place from 14 to 18 May 2018 during which international experts evaluated the national assessment reports, discussed ageing and identified best practices. The TPR report and related country specific findings were published at the end of October 2018. The report did not identify major deficiencies in European approaches to ageing management but noted differences across countries.



EUROPEAN COMMISSION WORKSHOP ON THE IMPLEMENTATION OF ARTICLES 8A-8C OF THE NUCLEAR SAFETY DIRECTIVE

The European Commission issued in September 2017 a call for tenders for an expert study to support the effective implementation of Articles 8a-8c of the Nuclear Safety Directive. The contract was awarded to a consortium of members from the European Technical Safety Organisations Network (ETSON) led by the Gesellschaft für Anlagen- und Reaktorsicherheit (GRS). The process includes, among other things, reviewing relevant international and European guidance documents and assessing the approaches and methodologies set in place at national levels for the implementation of the Safety Directive.

On 4 July 2018, a first workshop was organised to present findings of the review and assessment of international and European guidance documents and to provide update on the latest developments from the European Commission and international organisations on concepts used in Articles 8a-8c of the Nuclear Safety Directive. ENISS and representatives from licence holders, nuclear industry associations, safety authorities, international organisations and civil society participated in the workshop.

POSITION PAPERS

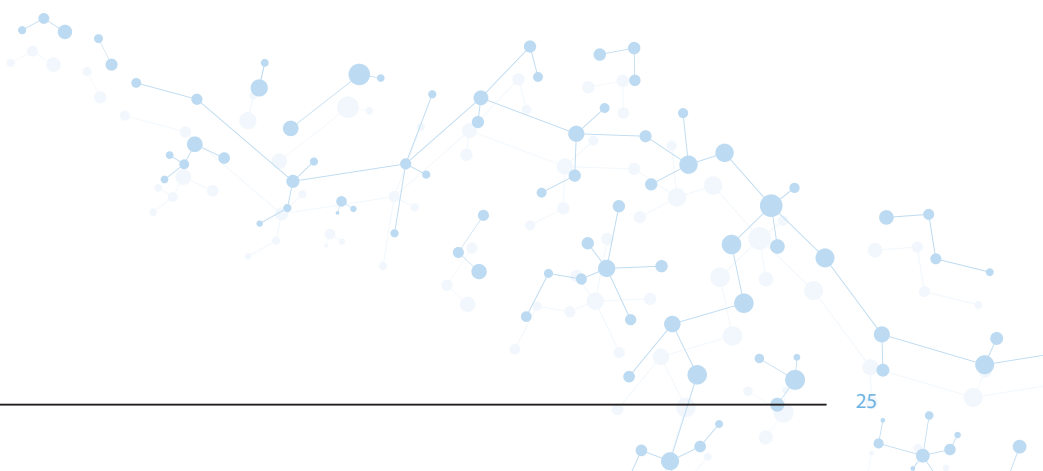
In November 2018, ENISS issued a position paper on the concepts risk-informed, reasonably practicable and cost-benefit analysis. ENISS had the opportunity to present the paper during the IAEA Technical Meeting to share experience on implementing safety

improvements at existing NPPs which took place in Vienna from 11-14 June 2018. ENISS also started developing position papers on technical issues such as defense-in-depth and practical elimination.

CONFERENCES

ENISS actively participated in a number of conferences organised at national and European level. For instance, ENISS took part in the international conference on "Dismantling Challenges: Industrial Reality, Prospects and Feedback Experience" which was held in Avignon, France, on 22-24 October 2018. Participation in

these conferences provided ENISS with an excellent opportunity to raise awareness about ENISS activities and to brief people about the various harmonization activities that have been taken in the area of nuclear safety.



COMMUNICATIONS & EVENTS



Communications continues to play an important role at FORATOM, bringing together the technical input and advocacy goals, to ensure a clear and harmonised message from the industry at EU level. FORATOM's communication aims are to:

- clearly position the association as the voice of the nuclear industry in Brussels,
- promote nuclear as part of the solution when it comes to climate change, jobs & growth, and security of energy supply,
- continue to gain recognition of the value of nuclear in relevant EU policies.

In order to further strengthen the voice and positioning of the industry, FORATOM has embarked on the development of a long-term communications plan. By working together with its Members and invigorating their input and expertise, FORATOM hopes to have a finger on the pulse of what the industry's communication needs really are. In conjunction with this, it is working to establish cooperation with relevant organisations in and around the EU bubble. This will ensure that our communication actions are in line with the needs and expectations of our stakeholders.

Here is an overview of the various tools developed during the course of 2018 to support FORATOM's advocacy goals.

FORATOM IN THE NEWS



Yves Desbazeille is Director General of FORATOM. Previously, he was the EDF representative for energy in Brussels. In the past, has been involved in different businesses & responsibilities at EDF (nuclear, hydro & thermal power projects).



Yves Desbazeille

20 Nov 2018

Europe's World | What the chiefs say
Climate & Energy

If we, as the European Union, are serious about tackling climate change, then European Union decision makers must act urgently and make use of all the best tools available today. The bloc's 2050 decarbonisation strategy has to be bold and far reaching, but it cannot ignore the contribution of low-carbon, flexible and dispatchable nuclear energy, capable of addressing the EU's long-term climate and energy objectives. Keeping the existing nuclear fleet in operation and adding new capacity can help the EU reach its emissions goals and avoid gas lock-in effects. Only by combining renewables with nuclear energy, making up a significant part of Europe's future energy mix, can we still deliver on our Paris Agreement commitments and save our planet, before it's too late.

Nuclear must account for one-quarter of energy mix to ensure Europe meets 2050 low-carbon targets

DISCLAIMER: All opinions in this column reflect the views of the author(s), not of EURACTIV.COM Ltd.

Promoted content

By Yves Desbazeille | FORATOM

22 nov. 2018

Supporters



The EU's nuclear power dilemma

By Damon Embling • last updated: 11/04/2018



15th FORATOM-IAEA Management Systems Workshop Begins in Ottawa

Shant Krikorian, IAEA Department of Nuclear Energy

JUL
17
2018



Engineers working on a turbine inside a nuclear power plant in Canada. The International Conference on Quality, Leadership and Management in the Nuclear Industry, is organized by FORATOM in cooperation with the IAEA, and hosted by Bruce Power. (Photo: Bruce Power)

More than 350 nuclear industry professionals are gathering in Ottawa, Canada this week to participate in an international workshop aimed at exploring quality, leadership and management in the nuclear power sector. With many experts reaching retirement age and a new generation of young

FORATOM VIEWS

FORATOM
THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY

Press Release
20 June 2018

Nuclear Long-Term Operation will help Europe meet its climate goals

Brussels, 20 June 2018: FORATOM, the voice of the European nuclear industry, called on the European Commission and other EU institutions to re-evaluate the long-term operation (LTO) of nuclear reactors given its role in Europe's long-term climate goals during a workshop held yesterday in Brussels.

"Nuclear LTO pays off for a number of reasons. It incurs low capital investment requires a relatively short realisation time for upgrade works and – most of all – it is reliable, low-carbon and affordable source of electricity to be retained in the mix at cost", underlines Yves Desbazielle, FORATOM Director General. "If the European wants to meet its climate goals, nuclear LTO will play an indispensable role in its future energy mix. Therefore, the EU institutions should recognise and reward incentives for the benefits it brings to the system."

Currently there are 130 operational nuclear reactors in 14 Member States, providing more than a quarter of the overall electricity production in the EU. The European Commission Nuclear Illustrative Programme (PNIC) published in 2017 stated that nuclear is expected to maintain its significant role in Europe's future energy mix up to 2050. The object requires investment in nuclear LTO of around 640-50 billion by 2050. According to the Commission, there are currently up to 50 nuclear reactors at risk of early closure or need 10 years, assuming their operators don't pursue LTO licences.

"The early closure of 50 reactors would translate into slowing down significant decarbonisation of Europe, maintaining CO2 emissions at the current level and its equivalent of around 7 years of renewable energy expansion" adds Yves Desbazielle, a look at Germany, which is set to miss its 2020 emission targets by a wide margin country had decided in 2017 to phase out 20 GW of coal plant capacity instead of 10 would have reached its emission targets and now it could be rightly recognised European climate champion."

The workshop "Shaping Europe's Energy Mix of the Future – A Role for Nuclear" gathered together stakeholders from various EU institutions, national regulators, and representatives from the nuclear industry. Invited speakers discussed the current LTO and its role in Europe's future energy mix, the industry's needs and challenges, the contribution of LTO to securing energy supply in the EU and fighting climate change, in preserving nuclear expertise and maintaining highly-skilled jobs, and the impact of national economies.

About us: The European Atomic Forum (FORATOM) is the Brussels-based 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 3,000 European companies working in the industry and supporting around 800,000 jobs.

FORATOM
THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY

Press Release
6 September 2018

MIT: nuclear energy is key to achieving decarbonisation targets

Brussels, 6 September 2018: Without the contribution nuclear energy provides as a dispatchable and low carbon energy source, the overall cost of achieving deep decarbonisation targets will increase significantly, according to the latest study released this week by the Massachusetts Institute of Technology's Energy Initiative. Findings and recommendations from the study were presented during a dedicated event held in Brussels by FORATOM.

Entitled "The Future of Nuclear Energy in a Carbon-Constrained World", the study examines how nuclear energy can answer current challenges which the world faces such as the urgent need to significantly reduce greenhouse gas emissions within the context of climate change and expanding access to energy and economic opportunities to billions of people. The study also covers several issues which have to be overcome in order to make nuclear energy the preferred option for countries willing to significantly limit their greenhouse gas emissions, of which costs and current policies are the most urgent ones.

"Incorporating new policy and business models, as well as innovations in construction that may make deployment of cost-effective nuclear power plants more affordable, could enable nuclear energy to help meet the growing global demand for energy generation while decreasing emissions to address climate change", says study co-chair Jacopo Buongiorno, associate department head of the Department of Nuclear Science and Engineering at MIT.

The importance of recognising nuclear energy for its benefits and introducing new policies which would allow all low-carbon technologies to compete on a level playing field without jeopardising climate and energy targets is especially topical at EU level as the European Commission is currently working on a proposal for a strategy for long-term EU greenhouse gas emission reductions that will shape Europe's policy for years to come.

"Before the EU decides which path should be selected to decarbonise its economy in line with the Paris Agreement, decision makers involved in this process should consider all available options and their potential impacts and then choose the most rational one", says Yves Desbazielle, FORATOM Director General. "Nuclear energy contributes to all key objectives of EU energy policy: decarbonisation of the electricity sector, security of supply and competitive power prices. This MIT study proves that the deep decarbonisation of the world, including Europe, will be extremely difficult to achieve without the use of nuclear energy."

The presentation of the study in Brussels, organised by FORATOM, gathered together stakeholders from various EU institutions, associations, NGOs, and many representatives from the nuclear industry. In addition to the study, invited speakers also discussed topics such as recent and ongoing EU initiatives linked to the EU climate strategy and nuclear-related research programmes undertaken by the European Commission's Joint Research Centre.

The MIT study is available [here](#).

FORATOM
THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY

Press Release
22 November 2018

Nuclear must account for one quarter of the energy mix to ensure EU meets its 2050 low-carbon targets

Brussels, 22 November 2018: If Europe is serious about decarbonising its economy by 2050 one quarter of the electricity produced in the EU will need to come from nuclear. This will not only allow citizens and industry to access the low-carbon electricity they need – when they need it – and it will help to reduce the economic burden of the transition to a low-carbon economy, consumers.

These are the conclusions of an FTI-CL Energy Consulting study commissioned by FORATOM. Entitled "Pathways to 2050: role of nuclear in a low-carbon Europe", the study analyses how nuclear can Europe reach its 2050 low-carbon targets. It focuses on three nuclear capacity scenarios: 10,000 (LOW), medium (10,000) and high (10,000). The authors also look at the European nuclear sector contribution to several key energy policy objectives, namely security of supply, decarbonisation sustainability, and affordability and competitiveness.

"The study finds that achieving the European emissions targets in a scenario with a significant phase out of nuclear plants would prove more challenging and increase costs for customers", Fabien Rogues, Executive Vice President of FTI Compass Low-Carbon Energy. "The results demonstrate how nuclear can contribute to an ambitious decarbonisation of the European economy". He adds: "In our view, the EU needs an electricity market design which rewards flexible sources and provides long-term investment signals."

"The latest intergovernmental Panel on Climate Change (IPCC) report (Global Warming of 1.5°C) recognises that nuclear power is essential if the world is to keep global warming to below 1.5 degrees. According to one of the IPCC scenarios, a two-fold increase in global nuclear capacity is needed to achieve our climate goals."

More information: [Pathways to 2050: role of nuclear in a low-carbon Europe - FORATOM summary](#)

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For more information, please contact Jessica Johnson: jessica.johnson@foratom.org

FORATOM
THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY

Press Release
29 November 2018

EU confirms nuclear as backbone of 2050 carbon-free Europe

Brussels, 29 November 2018: The European Commission has confirmed that nuclear will form the backbone of a carbon-free European power system, together with renewables. With each Member State free to choose its own energy mix, the Commission underlines that those which are investing in nuclear agree that it can contribute to security of energy supply, competitiveness and cleaner electricity production.

Published yesterday, "A Clean Planet for all" outlines the Commission's strategic long-term vision for prosperous, modern, competitive and climate-neutral economy by 2050.

"FORATOM is delighted that not only does the EU recognise nuclear as a low-carbon source of electricity, it also acknowledges that nuclear is capable of reducing Europe's dependence on fossil fuel imports and ensuring security of supply", states Yves Desbazielle, Director General of FORATOM. "As our Pathways to 2050 study shows, nuclear can contribute to an ambitious decarbonisation of the European economy. By taking a step in the right direction, the Commission has demonstrated a real commitment to reducing CO2 emissions across Europe."

This communication comes just one day after the official launch of the International Energy Agency (IEA) latest World Energy Outlook in Brussels. During this event, Dr Fabien Rogues, IEA Executive Director issued a stark warning to the EU that current policies are discouraging investments in new nuclear power plants and the long-term operation of existing reactors. He called on the EU to bear in mind that nuclear is a low-carbon source of baseload electricity capable of ensuring security of supply – important attributes when dealing with the variability of renewable energy sources.

"Even at Member State level, we are seeing a shift in opinion" adds Mr Desbazielle. "Poland has informally taken the decision to invest in nuclear in order to reduce its CO2 emissions whilst ensuring that access to the electricity it needs. France has decided to delay any decisions on cutting nuclear capacity due to the challenges which this would pose. We hope to see, in the near future, more such decisions and declarations that will contribute to the overall EU efforts of decarbonising its 2050 economy with the help of nuclear."

In its strategy, the Commission has also drawn inspiration from the latest intergovernmental Panel on Climate Change (IPCC) report (Global Warming of 1.5°C) which highlights the need to step up international climate action. The report also indicates that a sharp increase in nuclear energy production is needed to keep global warming below 1.5°C.

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For more information, please contact Jessica Johnson: jessica.johnson@foratom.org

FORATOM @FORATOM_nuclear · 6 Dec 2018

Another day at #COP24, another amazing panel discussion on #nuclear energy & its role in counteracting #ClimateChange 🌞🌱

This time representatives of #NGOs discussed various opportunities for nuclear energy technologies to reduce emissions & air pollution. #Nuclear4Climate

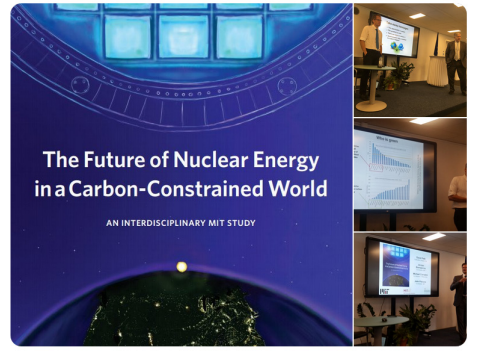


FORATOM @FORATOM_nuclear · 6 sept. 2018

#Nuclear is key to achieving #decarbonisation targets, according to the latest study released by @MITEnergy.

Findings & recommendations were presented during a dedicated event held in #Brussels by #FORATOM.

Read more: [foratom.org/press-release/...](http://foratom.org/press-release/)



FORATOM @FORATOM_nuclear · 13 déc. 2018

This week #FORATOM organised a workshop in Brussels focused on the future of #nuclear energy in the #EU 🇪🇺 & based on the latest FTI-CL Energy study entitled "#PathwaysTo2050: role of nuclear in a low-carbon #Europe".

Find out more about the study: [foratom.org/press-release/...](http://foratom.org/press-release/)



FORATOM NEW YEAR'S COCKTAIL WITH THE PRESS

On 29 January 2018, FORATOM organised an evening event which brought together EU correspondents. The goal was to provide them with an overview of the key issues which the association would be tackling during the course of the year.

13TH EUROPEAN NUCLEAR ENERGY FORUM

On 4-5 June 2018 the European Commission organised the 13th European Nuclear Energy Forum (ENEF) in Bratislava. FORATOM is a member of the Steering Committee involved in the organisation of this event. ENEF provides a unique platform for a broad discussion

about the opportunities and risks of nuclear energy. This year's discussion focused on two topics: "Maintaining a critical level of nuclear safety expertise in Europe" and "Small Modular Reactors".

INTERNATIONAL CONFERENCE ON QUALITY, LEADERSHIP AND MANAGEMENT IN THE NUCLEAR INDUSTRY

From 16-19 July 2018, the 15th FORATOM-IAEA Management Systems Workshop was held in Ottawa, Canada. Organised by FORATOM in cooperation with the IAEA and hosted by Bruce Power, this conference provided nuclear experts with an international

platform allowing for the exchange of knowledge on management systems, quality management standards as well as practical examples and case studies dealing with leadership and organizational culture and the implementation of risk-based approaches.



THE FUTURE OF NUCLEAR IN A CARBON CONSTRAINED WORLD



On 6 September 2018 FORATOM organised an event in Brussels, Belgium, to present the findings and recommendations from a study by the Massachusetts Institute of Technology's Energy Initiative entitled "The Future of Nuclear Energy in a Carbon-Constrained World". The study examines how nuclear energy can

answer current challenges which the world faces such as the urgent need to significantly reduce greenhouse gas emissions within the context of climate change and expanding access to energy and economic opportunities to billions of people

NUCLEAR ENERGY IN THE TRANSITION TOWARDS A DECARBONIZED ECONOMY

On 20 November 2018 the Spanish Nuclear Industry Forum (ForoNuclear) and FORATOM organised in Madrid an event, during which Prof. Jacopo Buongiorno, leader of the Massachusetts Institute of Technology's

(MIT) Energy Initiative, presented the study "The Future of Nuclear Energy in a Carbon-Constrained World" to Spanish stakeholders, including policymakers and media.

SPOTLIGHT POLAND

On 20-21 November 2018 the World Nuclear Association in collaboration with FORATOM and by invitation of the Polish Ministry of Energy, organised the "World Nuclear Spotlight Poland" conference in Warsaw. The

main objective of the event was to encourage Poland in its decision-making process by bringing together the leaders of the global nuclear industry and local decision makers.

PRESS CONFERENCE: PATHWAYS TO 2050



On 22 November 2018, FORATOM organised a press conference in Brussels to present the conclusions of an FTI-CL Energy Consulting study commissioned by FORATOM. Entitled “Pathways to 2050: role of nuclear in a low-carbon Europe”, the study analyses how nuclear can help Europe reach its 2050 low-carbon targets. It

focuses on three nuclear capacity scenarios in 2050: low (36GW), medium (103GW) and high (150GW) and looks at the European nuclear sector’s contribution to several key energy policy objectives, namely security of supply, decarbonisation and sustainability, and affordability and competitiveness.

COP24: NUCLEAR FOR CLIMATE STAND AND SIDE EVENT

From 2-14 December, the 24th Conference of the Parties (COP24) to the United Nations Framework Convention on Climate Change (UNFCCC) took place in Katowice, Poland. Nuclear energy was represented at COP24 through the Nuclear for Climate (N4C) grassroots initiative, which had a stand during the

whole conference. On 4 December, N4C hosted a side event entitled “Inclusive energy mix – only effective way to reduce carbon emissions”, during which the N4C initiative’s latest position paper on nuclear energy’s role in counteracting climate change was presented and discussed.

PATHWAYS TO 2050: ROLE OF NUCLEAR IN A LOW-CARBON EUROPE



On 11 December 2018 FORATOM organised a workshop in Brussels, Belgium to present the outcomes of the FTI study “Pathways to 2050: role of nuclear in a low-carbon Europe” to its members and various EU

stakeholders. During the panel debate, members of the study’s steering committee gave a nuclear industry perspective from their countries.

NUCLEAR ENERGY IN THE EU LONG-TERM STRATEGY

On 13 December 2018, FORATOM, together with SFEN and the Centre for European Policy Studies Energy Climate House (CEPS ECH) organized an event in Brussels, Belgium dedicated to nuclear energy and the European Commission’s long-term strategy for

greenhouse gas emission reductions. In addition to a presentation outlining the conclusions of the FTI-CL study, there was a panel debate which tackled the question about nuclear energy’s future.

INTERNATIONAL PRESENCE & ALLIANCES



FORATOM is represented at meetings of a number of key nuclear-related organisations and alliances, including the European Nuclear Safety Regulators' Group (ENSREG), Sustainable Nuclear Energy Technology Platform (SNETP), European Nuclear Society (ENS), European Human Resources Observatory for Nuclear (EHRO-N), Implementing Geological Disposal of Radioactive Waste Technology Platform (IGDTP), International Atomic Energy Agency (IAEA), and OECD/Nuclear Energy Agency (NEA).

SUSTAINABLE NUCLEAR ENERGY TECHNOLOGY PLATFORM (SNETP)

The Sustainable Nuclear Energy Technology Platform was established in 2007 to coordinate nuclear fission research actions and to advise the European Commission on priorities for EU funding. It underlines the importance of the research dimension of the nuclear sector, the need to maintain high levels of safety, the importance of retaining competences and know-how and the increasingly competitive nature of this global industry.

FORATOM continued to participate actively in the Platform's management and also as a partner in the EU-funded SPRINT project supporting SNETP. This included participation in the SNETP's Governing Board and Executive Committee meetings and a combined SNETP Secretariat and SPRINT project consortium meeting.



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