FORATOM

THE VOICE OF THE EUROPEAN NUCLEAR INDUSTRY

ANNUAL REPORT 2017

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MESSAGE
FROM OUR PRESIDENT

Nuclear is an essential component of a sustainable energy mix. The challenge we face as an industry is getting this message across to policy makers in Brussels. I plan to work closely with Yves, his team and the FORATOM members in order to render our association more visible and effective in Brussels. One of my main objectives for 2018 as President of FORATOM is ensuring that Europe is still able to keep the lights on. The EU as a whole has a common goal: to reach a decarbonized energy sector. We feel very strongly about the contribution that nuclear provides and will continue to provide in achieving this aim. In addition, we will become more engaged with other regions, enhancing contacts with countries outside of Europe where nuclear is showing a positive trend, such as the US, Japan, Canada and potentially even China and India.

INNOVATION

On the R&D side, Europe is providing limited funding to nuclear research and development, with the lion's share going to the ITER fusion project. Whilst recognising that this project is still a long way off its technical and commercial viability, it is important that we continue to invest in such breakthrough technologies. At the same time, we must not forget the need to invest in the fission R&D technologies of today. Furthermore, Europe needs to allocate sufficient resources to more step change projects, such as GEN IV reactors and Small Modular Reactors. In the case of SMRs for example, we can see that there is an appetite for the development of smaller reactors on European soil. I personally believe the EU needs to strike a balance it terms of the funds allocated to the technologies of tomorrow and those which we hope to see in the longer term.

> The EU as a whole has a common goal: to reach a decarbonized energy sector. We feel very strongly about the contribution that nuclear provides and will continue to provide in achieving this aim

NUCLEAR SKILLS

My personal experience from working in the Romanian nuclear sector has shown me the importance of maintaining a skilled workforce. Indeed, Romania is a good example of a country which invested in nuclear energy with the maximum participation of the local economy. Thanks to this investment, skilled Romanian workers have, over time, developed a strong safety culture and important engineering skills. However, today we find ourselves in a situation where a proportion of this skilled workforce is moving abroad to fill the gap in countries such as Canada, the United Arab Emirates, Finland and even China.

THE FUTURE

By working together we can change the way in which nuclear is perceived at European level. Nuclear energy has a lot to contribute to Europe's sustainability goals. By getting this message across and helping to change perceptions we will also be helping utilities to speak out in favour of a technology which forms a major part of their energy portfolio. We need to ensure long term legislative stability and predictability. This will encourage and improve the economic feasibility of investment in this important sector. More and more figures coming out from relevant organisations such as the OECD-NEA, IAEA and even the European Commission itself show that not only will nuclear play a role in the future, it will be one of the most important clean energy technologies.

In my opinion, this shows that the outlook for nuclear energy is bright. Nuclear will play an important part in the clean and balanced energy mix of the future - and we need to take pride in this!

Teodor Chirica

MESSAGE
FROM OUR DIRECTOR GENERAL

ONE VOICE IN BRUSSELS

FORATOM acts as the voice of the European nuclear industry as a whole in energy policy discussions with the EU Institutions and key stakeholders. We provide a bridge between our members and policy makers, which allows European companies to get their message across in EU policy debates.

FORATOM is lucky enough to count on a motivated and efficient team which actively works together to make sure that the voice of the nuclear industry is being heard, and that all relevant EU stakeholders receive factual information about the nuclear industry and the real potential which it has to offer. This is not an easy task as there are many in Brussels who would prefer it if we were to remain hidden behind closed doors. But we must continue to enhance our visibility and be more vocal in Brussels to ensure that our messages are understood.

Nuclear is a truly sustainable European industry. The fact that it is a low carbon energy source means it is good for the environment. From an economic perspective, its European supply chain offers a great deal to the European economy with an annual turnover of €70 billion. More importantly, it provides over 800,000 jobs to European citizens – contributing clearly to Europe's social fabric.

To further increase our chances of success, FORATOM, our national members and their member companies must all work together. By singing with one voice we can be more efficient and send out a much more powerful message. In addition, I believe that there is real need to advocate more strongly on behalf of the whole supply chain. This is one of our major goals over the coming months: we want to raise the profile of ALL our members in Brussels, in order to be more efficient and effective in our discussions with the EU.

> "I am personally convinced that the EU needs to keep 20-25% of nuclear generation in the long run to fulfil its climate objectives and ensure security of supply for its citizens and its industry

PLANS FOR 2018

As a European trade association, much of our work programme is linked to legislative proposals in the EU pipeline. Some of the key areas which we will be tackling in 2018 (and beyond) include:

- Monitoring developments in relation to Brexit and providing input on which elements we believe should be included in a Nuclear Cooperation Agreement between the EU and the UK.
- Promoting the value of the Euratom Treaty and its secondary legislation, particularly as the EU is considered to be best in class globally thanks to this legislation.
- Assessing the competitiveness of the nuclear industry in Europe and how this can be improved.
- Looking at how EU policies are potentially discouraging investment in the nuclear energy sector and bringing forward recommendations to encourage investor confidence.
- Continuing to support and promote R&D and innovative projects in the nuclear field.

A VISION FOR 2050

Looking ahead, one important project which we have in the pipeline for 2018 is the development of a 2050 Vision for the nuclear industry. This project will partly feed into the upcoming Communication on the future of EU energy and climate policies (including the Euratom Treaty) which the European Commission is expected to present by June 2018, as well as the potential revision of the 2050 low-carbon economy roadmap. What is clear to us is that, in order to achieve a low-carbon economy by 2050, Europe will need a zero-carbon energy-mix. Given that today the electricity sector accounts for 26% of CO_2 emissions in the EU, we have some way to go. This is where nuclear comes in. I am personally convinced that the EU needs to keep 20-25% of nuclear generation in the long run to fulfil its climate objectives and ensure security of supply for its citizens and its industry. This will be part of our Vision 2050 - to provide more clarity on what this future could look like and why.

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 EJ 1, and the Czech energy company, CEZ. More than 800 firms 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

- 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:

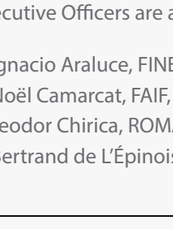
- Ignacio Araluce, FINE, Spain
- Noël Camarcat, FAIF, France
- Teodor Chirica, ROMATOM, Romania
- Bertrand de L'Épinois, past President
- Peter Haslam, NIA, United Kingdom
- Esa Hyvärinen, ET, Finland
- Mats Ladeborn, SAFO, Sweden
- Robert Leclère, BNF, Belgium

MEET THE TEAM

Danielle de Crombrugghe-L.
Support Team Manager

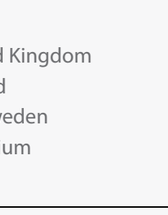
Graziella De Riddere
IT Manager

Yves Desbazeille
Director General



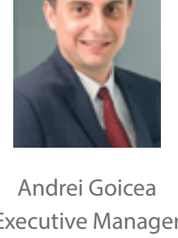
Alexandre Ferrafiat
Junior Legal Advisor

Nathalie Foriers
Assistant



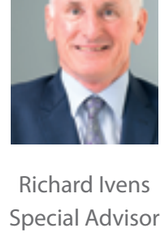
Muriel Glibert
ENISS Manager

Jessica Johnson
Communications
Director



Witold Strzelecki
Communications
Manager

Berta Picamal
Executive Advisor to the DG
Executive Manager



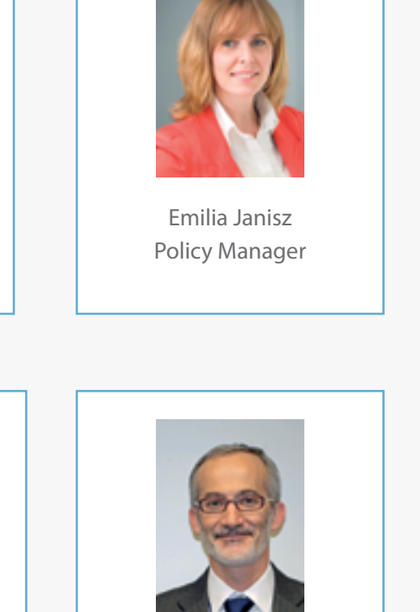
Aude Van Hille
Reception Assistant

Andrei Goicea
Executive Manager

Richard Ivens
Special Advisor

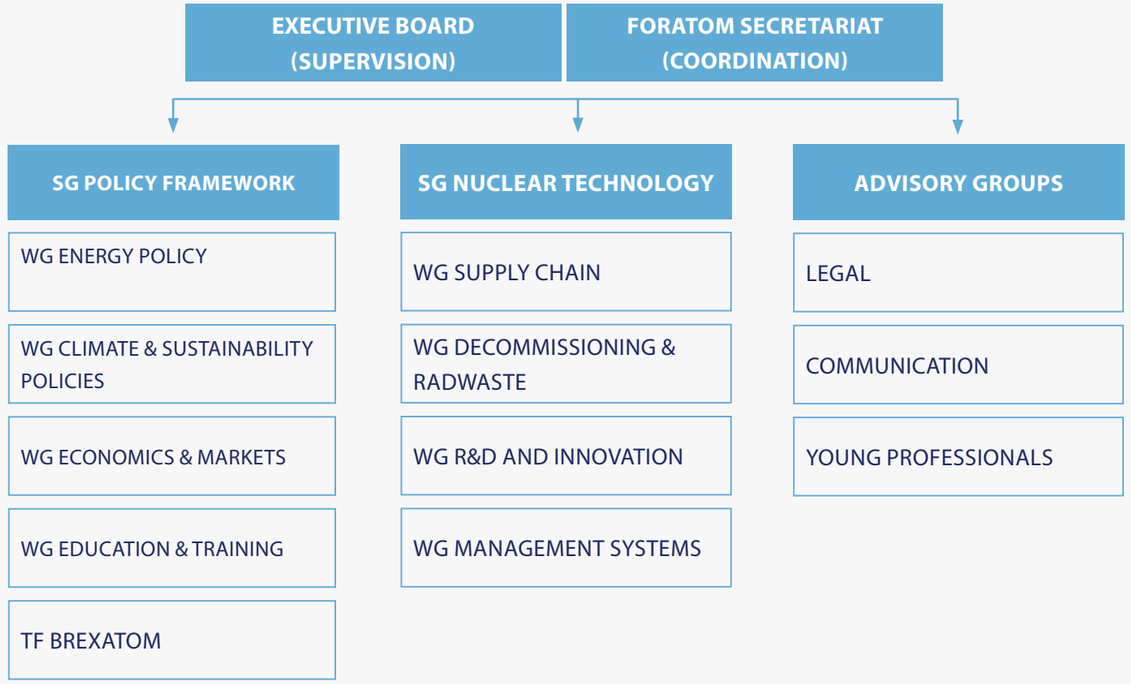
Emilia Janisz
Policy Manager

William Ranval
ENISS Director



OUR WORKING GROUPS

FORATOM

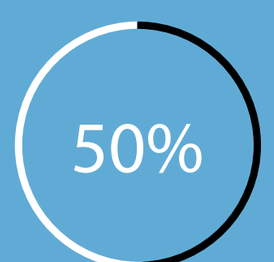


ENISS

KEY FACTS & FIGURES

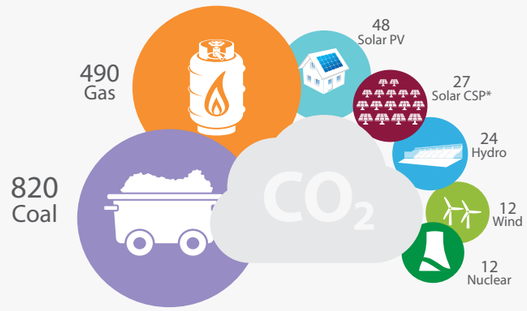
FORATOM infographics highlight nuclear power's benefits in Europe in terms of key issues such as climate change mitigation, economics, security of supply and competitiveness. They provide facts about nuclear energy in Europe in a concise and visually appealing way.

NUCLEAR GENERATES ALMOST HALF OF EUROPE'S LOW-CARBON ELECTRICITY



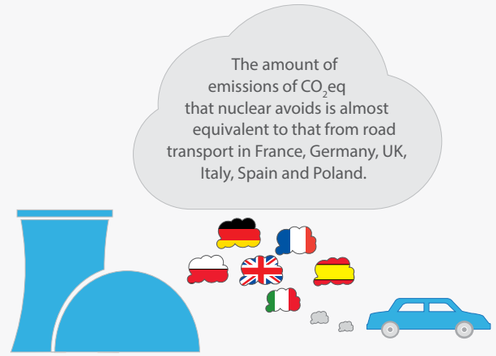
NUCLEAR - A TRULY SUSTAINABLE INDUSTRY

Comparison of greenhouse gas emissions
(grammes CO_2 eq/kWh)



*Concentrated Solar Power

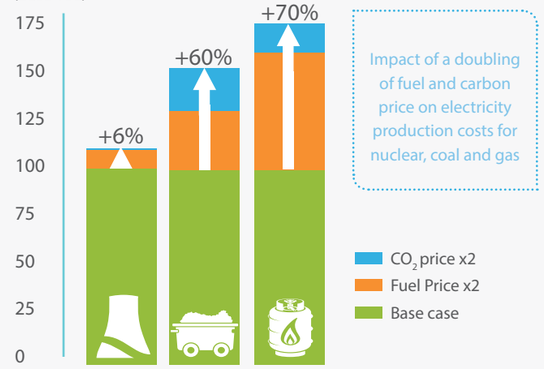
Source: IPCC 2014



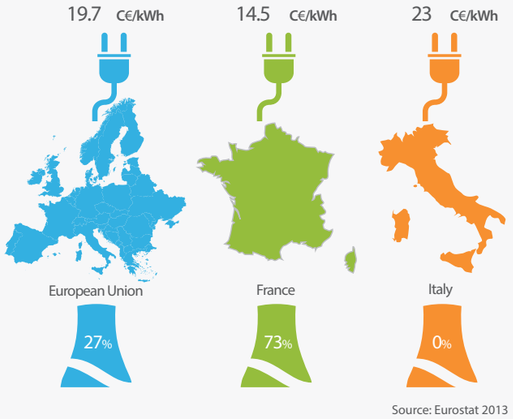
Source: Eurostat 2014

The cost of nuclear power is less vulnerable to fuel price fluctuations

(base 100)

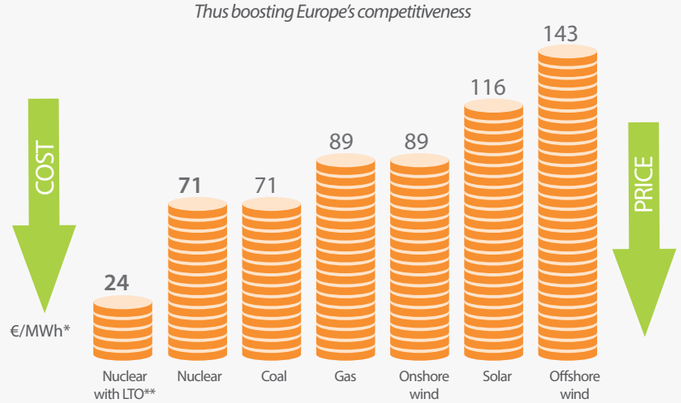


Source: AREVA 2014



Source: Eurostat 2013

Thus boosting Europe's competitiveness



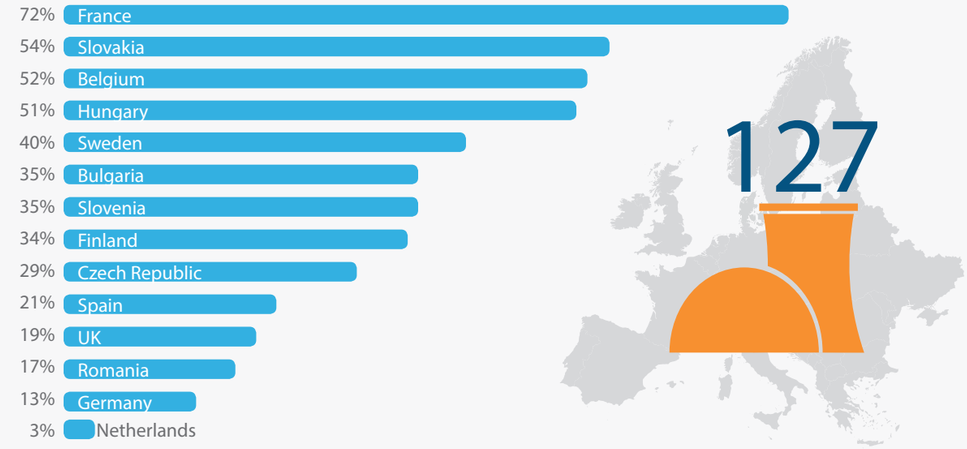
*at a 7% discount rate - **Long-term operation

Source:Projected Costs of Generating Electricity, IEA and OECD/NEA, 2015

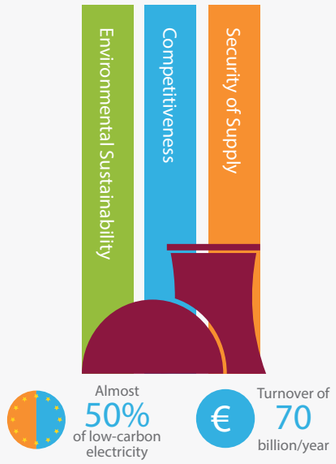
Since the 1970s, nuclear power has prevented a total of 1.84 million air pollution-related deaths globally and 0.68 million (over one third) in OECD Europe

Source: "Prevented mortality and greenhouse gas emissions from historical and projected nuclear power", Kharecha, P.A. and J.E. Hansen 2013.

14 COUNTRIES WITH 127 NUCLEAR REACTORS

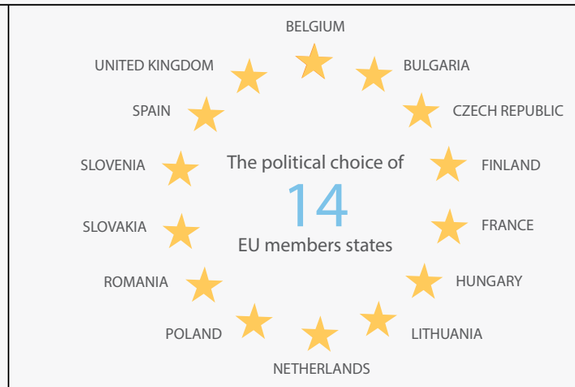


Source: Eurostat 2016, PRIS 2017

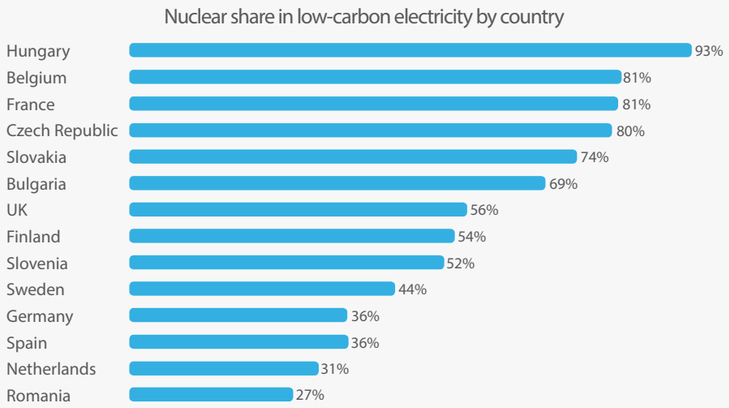


Almost **50%** of low-carbon electricity

Turnover of € **70** billion/year



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



Source: Eurostat 2017

over **24** nuclear reactors

Planned

BULGARIA CZECH REPUBLIC FINLAND HUNGARY POLAND ROMANIA SLOVENIA UNITED KINGDOM

4 nuclear reactors

Under construction

FINLAND FRANCE SLOVAKIA

Source: PRIS, PINC 2017

EUROPE-WIDE JOBS MAP

Civil nuclear industry supports 780,000 jobs in Europe

EUROPE 240,000 460,000 780,000

The figures only include the number of jobs in countries that operate nuclear reactors.

Direct jobs Estimates

Direct and indirect jobs Estimates

Direct, indirect and induced jobs Estimates

Direct jobs
Jobs that are directly created by the nuclear sector: people working for nuclear operators, utilities, specialized nuclear services suppliers, specialized administrative services etc.

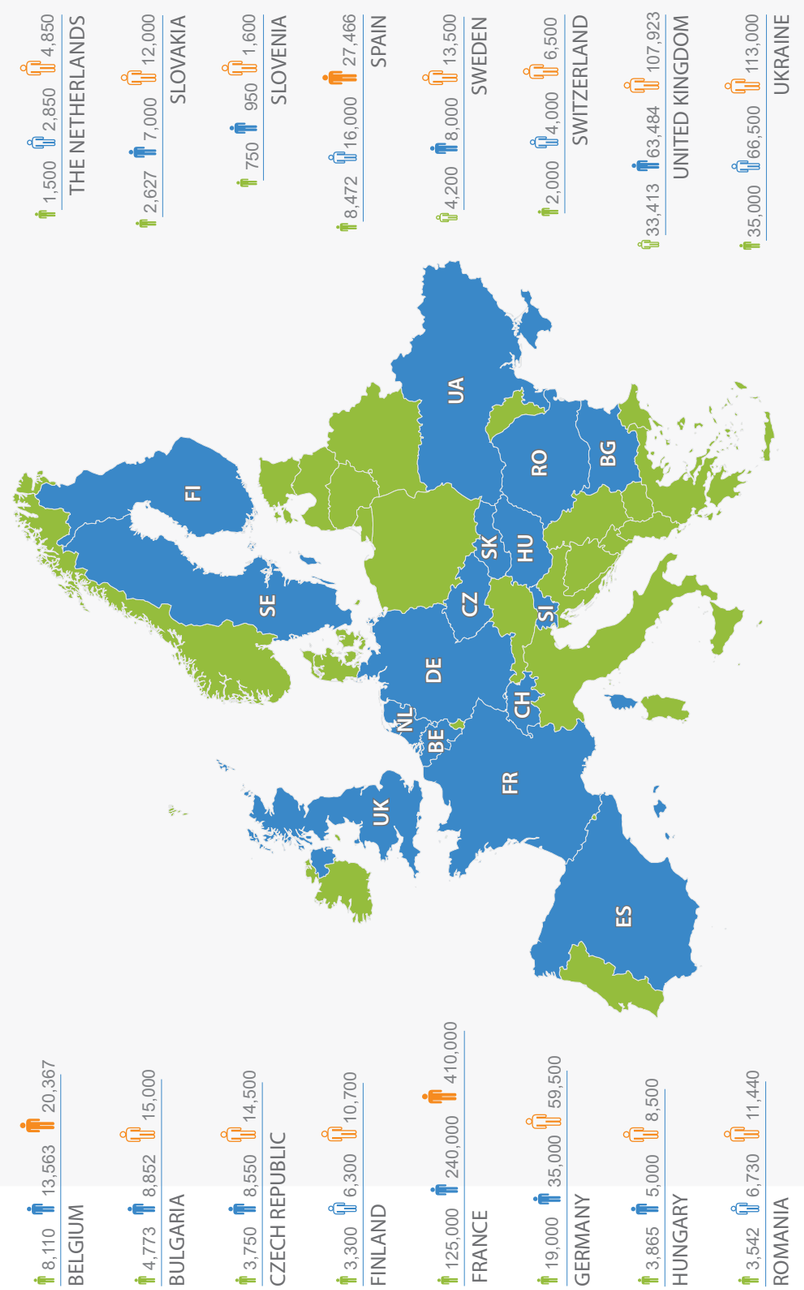
Indirect jobs
The nuclear sector buys goods and services from external producers, which results in the creation of additional jobs.

Induced jobs
Direct and indirect employees consume goods and services, which results in the creation of additional jobs.

Source: PricewaterhouseCoopers

Disclaimer: The figures indicated on the jobs map were provided by FORATOM members. This map is designed to give an overview of the number of jobs in and supported by the European civil nuclear industry, which encompasses a diverse and wide range of companies and activities. The estimates are based on the multiplication factors used by Pwc in its study entitled "Le poids socio-economique de l'électronucléaire en France, 2011."

April 2016



POLICY FOCUS

> FORATOM believes that low-carbon baseload generation should be preserved to ensure the adequacy of the electricity system.

ENERGY & CLIMATE

Presented in 2014, the **Energy Union** encompasses the EU's energy strategy for the medium term. In addition to the publication of regular State of the Energy Union Reports, this action plan covers a variety of proposals of relevance to the nuclear industry, most notably the "**Clean Energy for All Europeans**" legislative package (CEP). The CEP, 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. Below is an overview of the ones most relevant to FORATOM.

Governance of the Energy Union Regulation: 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. In discussions with the European Parliament, FORATOM expressed the opinion that national energy and climate plans should explicitly take into account the contribution of all low-carbon energy sources in terms of energy security. Furthermore, FORATOM believes that low-carbon baseload generation should be preserved to ensure the adequacy of the electricity system. The European Commission, Parliament and Council are expected to reach an agreement on this regulation during the first half of 2018.

Internal Market for Electricity Regulation: This proposal is one of four which aim to achieve a fully integrated electricity market. It follows on from the outcome of the New Energy Market Design consultation which ran in 2015. FORATOM's ultimate objective is to ensure that this regulation creates an effective market which encourages long-term investment in low-carbon technologies. To this end, in 2017 the Association put forward a series of proposals to aid discussions in the European Parliament and the Council. These included a recommendation that the regulation should promote electricity generation from all low-carbon energy sources rather than focusing solely on renewables. Linked to this, FORATOM believes that the current priority dispatch system which applies to renewables should be brought to an end in order to guarantee a level playing field for all technologies. Furthermore, the system costs of all technologies should be fully acknowledged, and security of electricity supply ensured. The European Commission, Parliament and Council are expected to reach an agreement on this regulation during the first half of 2018.

Energy Efficiency Directive: The revision of this Directive proposes a new energy efficiency target of 30% 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. One of FORATOM's concerns is that the proposal has the potential to discourage the use of certain low-carbon energy sources, such as nuclear, through the use of weighting factors. These factors only define energy in terms of primary energy, thereby excluding final energy. The original proposal assumed a 33% efficiency for electricity generated by nuclear power plants when the primary energy equivalence is calculated – compared to 100% efficiency for renewables. The corresponding Primary Energy Factor (PEF) of 3 would have had the adverse effect of supporting a reduction in nuclear capacity simply to achieve primary energy savings, rather than achieving a reduction in greenhouse gas (GHG) emissions by reducing fossil fuel capacity. Further to actions undertaken by FORATOM during 2017, reference to this PEF for nuclear was removed from the report adopted by the European Parliament's Committee on Industry, Research and Energy (ITRE). The proposal was voted in Plenary in early 2018 and now the European Commission, Parliament and Council are expected to come to an agreement in Trilogue.

Regarding the **State of the Energy Union** reports, the third edition was presented by European Commission Vice-President Maroš Šefčovič on 24 November 2017. In FORATOM's opinion, Europe needs to focus not only on cutting CO_2 emissions and transitioning to a low-carbon economy but must also put more emphasis on ensuring security of energy supply and jobs in Europe. In this respect, it has put forward a series of recommendations. These include pushing for a socially-fair energy transition, guaranteeing the availability of skilled jobs in Europe, ensuring a level playing field for all low-carbon technologies and the role which these can play in terms of reducing dependence on coal and gas imports from third countries. In terms of jobs created per MWh produced, nuclear is higher than either wind or solar.

From a climate change perspective, the most relevant legislation which made its way through the corridors of the EU institutions in 2017 was the **Emissions Trading System (EU-ETS)**. First introduced in 2005, the EU-ETS is currently in its third phase, which will run up until 2020. The aim of this scheme is to reduce EU greenhouse gas emissions from industrial installations, power stations and airlines operating within the EU. It does this through the application of a cap and trading system which limits the amount of CO_2 which can be emitted by the sectors covered and allows installations to receive, buy and trade emission allowances. In 2015, the European Commission presented a proposal to review the EU-ETS for the period after 2020 (referred to as Phase 4). By the end of 2017, Trilogue negotiations between the European Commission, Parliament and Council reached their final stage, with only a rubber stamping required in early 2018. FORATOM supports the aim of this legislation and believes that a higher carbon price is needed to encourage further decarbonisation in the power sector. As such, the Association welcomed the decision to double the Market Stability Reserve (the mechanism which absorbs excess permits from the market) to 24% over a 5-year period. Nonetheless, FORATOM would have liked to see the overall number of emission allowances decline at an annual rate of 2.4% from 2021 onwards, rather than 2.2% as has now been agreed (the current Linear Reduction Factor is 1.74%). Looking ahead, FORATOM will continue to work with the EU institutions to ensure that while introducing the revised EU-ETS, there should be no conflicting overlaps with other EU and national climate policies. It is crucial to guarantee that the revised EU-ETS becomes the key EU instrument for decarbonising the EU's economy, and that this is not undermined by, for example, the 2030 Energy Efficiency and Renewable Energy Targets and the corresponding directives.

> Europe needs to focus not only on cutting CO_2 emissions and transitioning to a low-carbon economy but must also put more emphasis on ensuring security of energy supply and jobs in Europe.

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 30 March 2019. 2017 thus centred on initial discussions between the UK and the EU with the aim of negotiating an exit deal before the 2019 deadline. As mentioned, in **leaving the EU, the UK will also leave the Euratom Treaty, and this has become a matter of concern for the nuclear industry.** During the course of 2017, FORATOM focused its efforts on identifying the main issues which would need to be tackled during the negotiations relating to nuclear matters, as well as developing a series of recommendations.

These recommendations can be summarized as follows:

- The rapid establishment of a Nuclear Cooperation Agreement between the EU and the UK, including arrangements for free trade in the nuclear sector.
- Linked to this, a smooth transition from the current Euratom safeguards arrangement to a new UK regime should be ensured.
- The free movement of nuclear skills to and from the EU and the UK should be preserved.
- In terms of Euratom R&D programmes, a new association agreement needs to be negotiated to maintain cooperation between the EU and the UK
- Cooperation and collaboration on nuclear policy and regulation (including safety) should continue.
- The validity of contracts already approved by the European Commission and the Euratom Supply Agency for the supply of nuclear materials between EU suppliers and the UK needs to be confirmed.
- To minimise any disruption to the civil nuclear sector activities across the EU, a transitional period should be implemented.

One of the challenges in 2017 was the fact that the UK and the EU struggled to come to an initial consensus on three fundamental Brexit issues (citizens' rights, financial settlement and Ireland). This prevented talks from moving on to other issues, including the future nuclear relationship. However, a breakthrough was achieved at the end of the year, as an agreement on these three contentious areas was reached on 8 December 2017. FORATOM plans to continue working with its members on identifying challenges and recommendations with the outcomes then communicated to the relevant EU institutions in order to assist in the negotiations.

NUCLEAR SPECIFIC

Nuclear Investments: In accordance with Article 40 (covering investments) of the Euratom Treaty, the European Commission is required to publish **"Programme Indicatif Nucléaire Communautaire"** (PINC, illustrative programme on nuclear energy) reports on a regular basis. The aim of such documents is to establish indicative targets for nuclear production and the investments needed to attain them. The final version of the latest edition of PINC was issued on 12 May 2017 and provides an overview of the current situation across Europe. It includes a reference to the fact that nuclear helps to ensure security of energy supply in those Member States with nuclear power plants. The report furthermore touches upon the idea that nuclear could help Europe achieve its climate and energy targets. Nevertheless, in FORATOM's opinion, and in spite of recommendations made by the European Economic and Social Committee (EESC), the Commission has failed to address several key issues in this report. For example, the authors have not undertaken a deep analysis of the competitiveness of the nuclear industry and its contribution to security of supply.

Furthermore, it lacks a clear analytical process for national decision-making on the role of nuclear power in relation to other energy sources in the mix.

Following on from PINC, in September 2017 the Commission launched a series of studies, namely:

- Cost assessment and financing mechanisms for radioactive waste management,
- Market for decommissioning nuclear facilities
- Risk profile of funds allocat to back end of the fuel cycle
- Scenarios on the EU nuclear reactors reaching end of licence terms
- Benchmarking of nuclear technical requirements against WENRA safety reference levels, EU regulatory framework and IAEA standards.

FORATOM will now monitor the development of these studies and ensure that the voice of the nuclear industry is heard in the consultation process.

On 15 May 2017, the European Commission published a report concerning progress in the implementation of the **Radioactive Waste and Spent Fuel Management Directive,** which included an inventory of the radioactive waste and spent fuel which is present in the EU. FORATOM is currently working with its members to identify areas requiring further work.

Further to a proposal in 2016 by the European Commission to revise the **Regulation for the control of exports, transfer, brokering, technical assistance and transit of dual-use items,** the European Parliament's International Trade (INTA) Committee drafted, and subsequently adopted, a report on the proposal at the end of November 2017. This report is in line with FORATOM's recommendations. For example, it maintains the new rules put forward in relation to authorizations for 'large projects' which would apply to certain large multiannual projects. Whilst the duration of these licenses is limited to 4 years, in some instances they could be extended to the whole duration of the project. The European Parliament is expected to adopt this report in Plenary in early 2018.

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.

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.

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 licence holders interact with WENRA (nuclear regulators), the European Institutions and the International Atomic Energy Agency (IAEA).

Although ENISS is hosted by FORATOM, it enjoys 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 2017, ENISS had the opportunity to provide its views on a draft WENRA guidance paper covering the question of **"timely implementation of reasonably practicable safety improvements to existing nuclear power plants"** under the revised Nuclear Safety Directive. This paper was then submitted to the IAEA as input towards the implementation of the Vienna Declaration and was made public in July 2017.

ENISS also provided input to the WENRA Reactor Harmonisation Working Group (RHWG) draft report on **Passive Systems**, as well as the WENRA Waste and Decommissioning Working Group (WDWG) draft report **Radioactive Waste Treatment and Conditioning Safety Reference Levels.** Version 1 of the latter report is to be published in 2018, after which each national regulator will undertake a self-assessment to be included in Version 2 of the report, expected in 2020.

INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA)

ENISS provided comments throughout the year on 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).

ENERGY EXPERT CYBER SECURITY PLATFORM (EECSP)

In 2017, the EECSP, which has been mandated by the European Commission (DG Energy) to give guidance on infrastructural issues, security of supply, smart grid technologies and nuclear energy, published a report on cyber security in the energy sector. An ENISS expert participated in the preparation of the report. The latter identifies areas where actions should be taken to improve cyber security and manage risks for energy infrastructure.

INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP)

The 2017 ICRP Symposium was held in conjunction with the second EU Radiological Protection Research week which took place in Paris from 10-12 October 2017. ENISS was invited to attend the Symposium and presented a paper entitled A day in the life of an RP-Practitioner in a Nuclear Facility.

ENISS also participated in the fifth meeting of Senior Representatives of Organisations in Formal Relations with ICRP which took place in Geneva on 17 November 2017. The primary purpose of this meeting was to explore areas for constructive collaboration. Each organization was invited to prepare a short report presenting relevant activities and proposals for collaborative efforts.

CONFERENCES

ENISS actively participated in a number of conferences organised at national and European level. For instance, ENISS took part in the fourth European Nuclear Safety Regulators Group (ENSREG) Conference on Nuclear Safety which was held in Brussels on 28 and 29 June 2017. 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 polices.

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.

FORATOM IN THE NEWS


NUCLEAR ENGINEERING INTERNATIONAL

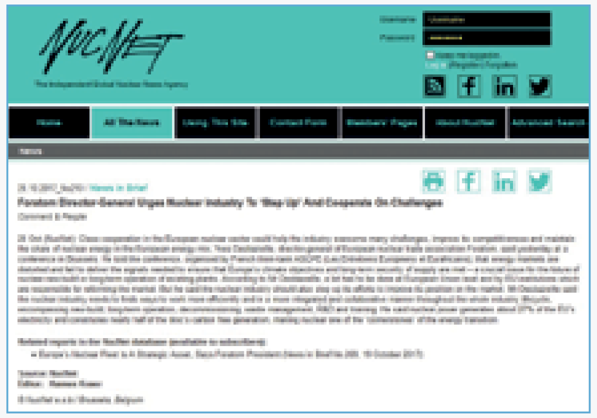
Foratom advises transitions arrangements for Brexit


ENTREVISTA NUCLEAR

"La industria nuclear europea es estratégica"


independent · international · incisive energypost

The next generation of European nuclear talent: where will it come from?


NucNet


Foro Nuclear

Nuclear power plants do not emit CO2

"The European nuclear industry is a strategic sector"


BREXATOM: European Union's nuclear trade body wants quick deal with UK after Brexit

FORATOM VIEWS

BREAKFAST BRIEFING FOR EUROPEAN PARLIAMENT OFFICIALS

On 10 March MEP advisors and assistants participated in the FORATOM Briefing Breakfast for European Parliament Officials. The briefing focused on nuclear waste management given the expected release by the European Commission of the report on the implementation of Radioactive Waste and Spent Fuel Management Directive (2011/70/Euratom of 19 July 2011) which would then be sent to the Council and the European Parliament as required by the Directive.

At the same time, the Commission was due to publish its analysis of the national programmes for waste management that Member States submitted in August 2015. The Long-term Waste Management Director of the Belgian National Agency for Radioactive Waste and enriched Fissile Material (NIRAS/ONDRAF) provided an overview of the different types of radioactive waste and the possibilities for disposing and storing it in Europe.

PUBLIC INFORMATION MATERIALS EXCHANGE (PIME) 2017

The 2017 edition of PIME was held at COVRA – the Dutch radioactive waste management company - in Middelburg (the Netherlands) from 19 to 22 March. Organised by the European Nuclear Society (ENS) in cooperation with FORATOM, the event brought together around 100 people to discuss nuclear communications and addressed a number of communications issues including waste management and how best to involve stakeholders in decision-making processes. Specific topics covered included:

- Renewables and nuclear power as key enablers for a successful energy transition
- Learning from the international experiences of communications and stakeholder involvement in radioactive waste disposal programmes
- Multinational collaboration in waste disposal

The PIME 2017 Award went to NuGen for its "Bright Sparks" education programme about low-carbon electricity. The programme focuses on engagement with teachers and pupils at schools close to the Moorside site and explores educational and societal issues around the need for new electricity production. Other short-listed PIME Award finalists were the American Nuclear Society for the "States Toolkit" Campaign, the Canadian Nuclear Safety Commission for the "What is Radiation?" video and Energy for Humanity for its communication campaign in Switzerland held before the national referendum on the phase-out of nuclear energy.

EUROPEAN NUCLEAR ENERGY FORUM (ENEF)

The 12th ENEF plenary meeting took place on 22-23 May in Prague and was hosted by the Czech Republic. Founded in 2007, ENEF gathers all relevant stakeholders in the nuclear field: governments of the 28 EU Member States, European institutions including the European Commission, the European Parliament and the European Economic and Social Committee, representatives of the nuclear industry and regulators, electricity consumers, and civil society. It provides a unique platform for a broad discussion on the opportunities and risks of nuclear energy.

This year's conference focused on the 60th anniversary of the Euratom Treaty with an emphasis on Euratom's achievements and its future. Invited panellists Stephan Lechner (Director, Euratom Safeguards, European Commission), Martynas Norbutas (Vice-Minister of Environment, Lithuania), Kirsty Gogan (Energy for Humanity), and Bruno Quaglia (General Secretariat for European Affairs, Euratom) discussed Euratom's achievements and challenges. This was followed by a World Café interactive discussion amongst the participants.

Opening speeches were delivered by Bohuslav Sobotka (Prime Minister of the Czech Republic), and Robert Fico (Prime Minister of Slovakia), both of whom strongly supported nuclear power as key element of their countries' energy mix and its importance in meeting their countries' climate commitments. Miguel Arias Cañete (European Commissioner for Climate Action and Energy) also spoke, providing a European Commission perspective on the Euratom Treaty. The event also included two panels, one on "Radioactive Waste and Spent Fuel Management in the EU" and the other on "Standardisation potential in the supply chain of nuclear power plants and potential cross-benefits/ costs from a regulatory point of view for an increased coordination among regulators".

BREXIT DINNER DEBATE

On 24 October, the European Energy Forum (EEF) organised a dinner debate in the European Parliament in Strasbourg, France, entitled "The Brexit impact on nuclear energy: how to ensure a smooth transition". The debate was hosted by FORATOM. Participants, including MEPs, discussed the possible implications of Brexit for the nuclear industry. The debate was chaired by Jerzy Buzek MEP (EPP, Poland), President of the EEF.

In his introductory remarks, FORATOM Director General Yves Desbazeille underlined the role of nuclear energy as one of the cornerstones of Europe's energy transition given the strategic role it plays in the European economy with a turnover of €70bn per year supporting around 800.000 jobs. Adam Kanne, Senior Advisor at Uniper, Chairman of FORATOM's Brexit Task Force, followed with a presentation on the various steps which the nuclear industry believes are required to facilitate a seamless transition. Mr Kanne concluded his presentation by stressing that close cooperation between the EU and UK was needed to secure the prosperity and safety of the European nuclear industry.

Following an intervention by Julie Girling MEP (ECR, UK), participants had a chance to intervene in the debate. All agreed that both sides should start negotiating a post-Brexit relationship in order to avoid any disruption.

MEP NUCLEAR FORUM

On 15 November, the MEP Nuclear Forum was held in Strasbourg. The theme of this event was the "Role and Competitiveness of Nuclear Power in the New Market". Chaired by Derek Vaughan MEP (S&D, UK) and hosted by Finnish member companies Fortum and TVO, this dinner debate included interventions by Zuzana Petrovicova (Deputy Head of Unit for Nuclear Energy, Waste & Decommissioning, DG Energy, European Commission), Esa Hyvärinen (Fortum) and Anna Lehtiranta (TVO).

FORATOM WORKSHOP ON THE HARMONY PROGRAMME

On 12 December, FORATOM organised a workshop with guest speaker Agneta Rising, Director General of the World Nuclear Association (WNA). The focus of this event was on the WNA's Harmony programme, which represents the global nuclear industry's vision for the future of electricity. According to the programme, the target for nuclear energy should be to provide 25% of electricity in 2050, requiring 1000 GWe of new nuclear capacity to be constructed. In order to reach this goal, the industry should focus on achieving the following targets: providing a level-playing field which will allow countries to introduce technology neutral market frameworks that promote all low-carbon technologies, harmonising regulatory processes and introducing an effective safety paradigm. One of the actions being undertaken by the Harmony programme is an evaluation of current barriers and recommended solutions. These can be summarised as follows:

- Electricity market failures: Ensure a level playing field for all low-carbon energy sources including nuclear.
- Regulatory barriers: Harmonise international regulatory processes to ensure consistency, efficiency and predictability.
- Misconception of risks and benefits: Address public concerns and put the health, environmental and safety risks of nuclear in perspective compared to other power generation technologies.

OTHER EVENTS

During 2017, FORATOM worked on preparing for the 15th FORATOM-IAEA Management Systems Workshop. Further to the success of previous workshops, the concept has been transformed into an International Conference on Quality, Leadership and Management in the Nuclear Industry, which will, on this occasion, be hosted by Bruce Power in Ottawa, Canada from 16 – 19 July 2018. The primary goal of this event is to raise awareness and increase understanding of management systems integrating all the vital objectives of nuclear facilities and activities. It also promotes the application of the IAEA safety standards. More information and registration can be found at: **www.mstf2018.org.**

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). Below is a snapshot of just some of the activities FORATOM was involved in in 2017.

NUCLEAR 4 CLIMATE

The objective of the Nuclear 4 Climate campaign is to present nuclear energy as a key solution to the climate change conundrum. Its messaging focuses on the need to use all low-carbon energy sources, including nuclear energy, in order to limit climate change whilst at the same time still meeting development goals. One of the main actions of the Nuclear 4 Climate initiative in 2017 was its presence - via an exhibition booth and dedicated event - during the COP23 conference in Bonn, Germany. This event provided an excellent opportunity for the sector to explain to those present why low-carbon nuclear must be considered as a valuable tool in the fight against climate change – particularly given the significant media attention Germany's exit from nuclear and continued reliance on coal is having in terms of CO_2 emissions.

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.

FORATOM

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