

60 YEARS OF SUSTAINABLE ENERGY



ANNUAL REPORT 2020



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MESSAGE FROM MEP TSVETELINA PENKOVA



When the plan for the European Green Deal was introduced in the beginning of this Parliamentary term, it was considered by many to be too ambitious and forward-looking. The idea of climate neutrality seemed almost impossible and somehow outside of our daily lives. However, we see that last year has provided not only many challenges, but also significant opportunities to reflect on our way of life. No one could have predicted just months ago the all-encompassing aftermath of the COVID-19 pandemic on the global economy. Above all, the biggest short-term impact it had so far was the acceleration in our uptake of digital technologies. Everyone who was able to work remotely has done it at least a few times this year, sometimes even more than that.

Even though we experienced an economic downturn and some sectors were forced to reduce their output, the inclusion of digital solutions will inevitably require an increase in electricity consumption. Currently, nuclear power provides about a quarter of the electricity produced in the EU. Combined with the need for a baseload power

output, this makes nuclear one of the most important technologies we have at our disposal.

The EU institutions reacted to the looming crisis with the most ambitious set of stimulus measures seen to date. Instead of backing out from the trends set out by the Green Deal, the EU leaders doubled down on their vision for the future. The unprecedented recovery package of EUR 750 Bn. will be invested in digital and green projects that support the so-called "twin transition".

Nuclear power has the potential to provide the backbone of our energy future. It has proven itself as a reliable technology in the past 65 years and definitely has more to give. The fact that it is a predictable source of energy, which does not suffer from intermittent gaps and has no greenhouse gas emissions makes it an indispensable part for our energy mix for the foreseeable future.

We should use the opportunities of this crisis to move forward in our technological capabilities, not to regress back. I believe that nuclear power should remain the cornerstone of our energy supply for the foreseeable future. I would like to wish all the best to the FORATOM team! We need a strong voice of expertise to trace the path forward during these uncertain times.

Tsvetelina Penkova - Group of the Progressive Alliance of Socialists and Democrats in the European Parliament (Bulgaria)

MESSAGE FROM OUR PRESIDENT

2020 focused on some of the key topics which can affect the competitiveness of the European nuclear industry. Here, EU policy has an important role to play – the decarbonisation challenge is mammoth, and so it's important that all viable solutions are taken into account and treated fairly.

From an EU policy perspective, sustainable finance - and its taxonomy - remained at the top of our agenda throughout the year and this will most likely also be the case for most of 2021. Indeed, depending on what the Commission finally decides to do with nuclear, this could render the cost of finance more expensive which would have a direct and immediate impact on the competitiveness of existing as well as new nuclear power plants. It is essential that the EU sticks to the principle of technology neutrality. In this respect, it became clear that many stakeholders share our concerns on the proposed Delegated Act published at the end of 2020 – albeit for very different reasons. At the end of the day, if the Commission remains committed to the principle of technology neutrality as outlined in the Regulation - then it must review its proposal to ensure that all technologies are treated equally. And in order to do so FORATOM is convinced that this means identifying the criteria and thresholds first and then applying them in the same way to all technologies within the same sector. Applying different (and less stringent criteria) to certain technologies will lead to an unnecessarily high decarbonisation cost.

When it comes to nuclear, we are pleased to see the Commission dedicate the task to the experts under the Joint Research Centre. But we continue to remain concerned about the lack of clarity on how, when or even if the Commission will include the outcomes under the Taxonomy. As FORATOM, we remain convinced that a robust, scientific assessment of nuclear will lead to the inclusion of the EU's largest source of low-carbon electricity under the initiative. And so we urge the Commission to ensure that nuclear be included as soon as the work of the JRC is complete.

Of course, it is also up to the nuclear industry itself to assess ways in which it can become more competitive. It was good to see the latest IAE and OECD NEA report on the 'Projected costs of Generating Electricity 2020' recognise that the longterm operation of nuclear power plants remains the cheapest source of electricity across the board. In addition, the work initiated on enhancing the nuclear sector's competitiveness and harmonisation via a common supply chain methodology



is an important project which will not only ensure a high level of safety, but should also help bring down the costs of nuclear components in the medium term thereby helping to keep the cost of existing nuclear reactors in check thus making Long-Term Operation more attractive. At the same time, it is important that the sector continues to work on bringing down the costs of nuclear new build projects. This topic was addressed by a Task Force dedicated to the financing of new projects, and I look forward to the conclusions and recommendations of this group which are due in the first half of this year.

Looking ahead I see two very interesting developments for the nuclear industry. The first of these relates to the hydrogen strategy. This could be a real game changer for hard-to-decarbonise sectors such as industry, transport and buildings. The challenge is going to be the roll out of large-scale projects over the next ten years which meet three key requirements:

- The energy used to produce the hydrogen is lowcarbon.
- The projects themselves are capable of keeping up with the rapid demand for hydrogen.
- And the hydrogen produced is made available at an affordable price to downstream users.

The second is Small Modular Reactors (SMRs). Other parts of the world are showing strong political support for these technologies, and we hope to see the EU do the same. Whilst they are unlikely to replace large, traditional reactors, they show strong potential for a broad range of applications. In several Northern European countries, including my home country Finland and our neighbor Sweden, there is already interest in seeing whether SMRs could be built and used to produce low-carbon heat for district heating purposes in addition to power. Estonia is also very keen to see if SMRs could replace part of their high CO2 energy system. Others believe that SMRs could be built close to industrial clusters, providing low-carbon electricity, heat and even hydrogen for traditionally carbon intensive industries. There are some very exciting projects in the pipeline and I am looking forward to see how these will evolve.

2020 has not been an easy year for the sector with the impact of COVID taking its toll on already strained company finances. On the other hand, the need to voice the positions of the nuclear industry in the EU fora is probably bigger than ever. The strength of FORATOM lies in seamless cooperation between companies, national associations and the Brussels secretariat. Only by working together we can make sure that the nuclear industry has the resources it needs to keep focusing on the key topics which matter to us all.

Esa Hyvärinen

MESSAGE FROM OUR DIRECTOR GENERAL



2020 was a very difficult and tumultuous year for everyone and unfortunately the situation is expected to continue for most of this year. But against this backdrop I would like to start by focusing on the very valuable role which workers in the nuclear sector have played – and will continue to play – during the crisis.

Amid the outbreak of COVID-19, workers in the European nuclear industry have been doing their utmost to keep Europe's lights on by providing people, hospitals and industry with a stable and secure supply of low-carbon electricity where and when it is needed. Nuclear reactors have continued to run thus ensuring a steady supply of electricity across the continent. And all this thanks to the efforts of the entire nuclear workforce which is committed to continuing its work and providing electricity despite all the difficulties, for which we are grateful. Here in Brussels, our focus has remained on the policies developed by the EU. Of course, the sustainable finance taxonomy remained one of our top priorities throughout the year. At the same time, FORATOM maintained a proactive approach to several of the files trickling out from the EU Green Deal. At the top of this list is the Hydrogen Strategy. It is clear that hydrogen will play a key role in helping hard-to-decarbonise sectors, such as industry and transport, to reach CO2 emission reduction targets. But many questions still remain: which energy sources will be used to produce this hydrogen? Will there be enough to meet the needs of all sectors? And, ultimately, will it be affordable? A steady supply of low-carbon hydrogen can be produced using nuclear and so throughout the year FORATOM has been working with its members to identify projects currently in place, and the policy framework needed to get them off the ground.

We have also been working on important topics which are the increasing focus of debate in Brussels. These include Small Modular Reactors, which are expected to become a game-changer in some parts of Europe, particularly smaller Member States. In addition, as part of its COVID recovery plan, the Commission has decided to designate cancer diagnosis and treatment as one if its top health priorities. Given this, FORATOM has teamed up with Nuclear Medicine Europe in order to develop a position paper which outlines the solutions brought by nuclear medicine in this field.

At Member State level, we saw many positive developments relating to nuclear energy. This applies to both countries which already have nuclear power plants, as well as those that have not used this source of energy so far. Based on the Member States (MS) National Energy and Climate Plans (NECPs) that were submitted to the European Commission, we note that 16 EU MS have included nuclear energy in their future energy plans (as either new build projects, the longterm operation of existing power plants and even research and innovation into new reactor technologies). What is also very encouraging is that the public is becoming more and more pro-nuclear in many European countries given the current climate emergency.

2020 was also the year in which FORATOM celebrated its 60th anniversary. Plans put in place to celebrate this had

to be put on the back burner as it became clearer that a physical toast to this milestone would not be possible. Nevertheless, whilst 2021 may be FORATOM's 61st birthday, we hope that by the end of the year we will still find a way to celebrate with everyone in person.

Looking ahead, FORATOM will continue to focus on legislative proposals which are of relevance to the nuclear sector. These include the EU's climate ambitions under the Green Deal, and strategies such as those relating to hydrogen, the circular economy and industrial policy.

I truly believe that 2021 can be the dawn of nuclear energy's renaissance. Many independent international organisations confirmed without a doubt that nuclear energy has to play an important part in the decarbonisation process. This does not mean that the pathway ahead of us in 2021 will be easy. There are many challenges to overcome. For example, the industry itself recognises that nuclear new build projects need to become more competitive. And this can in part be supported by a vibrant, Europeanbased supply chain.

I believe that by working together we will be able to ensure that 2021 will be the year in which we can strengthen the position of nuclear energy in Europe's energy mix and beyond.

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 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.

Meet the team



Sophie Dayraut Communications Officer



Danielle de Crombrugghe-L. Support Team Manager



Graziella De Riddere IT Manager

Our members

The membership of FORATOM is made up of 15 national nuclear associations active across Europe and the companies that they represent, and six corporate members. 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 •

The Executive Board

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

- Ignacio Araluce, FINE, Spain
- Jean-Michel Quilichini, GIFEN, France •
- Teodor Chirica, ROMATOM, Romania (Past President) •
- Esa Hyvärinen, ET, Finland •

- Nuclear fuel fabricators
- Spent nuclear fuel reprocessing companies •
- Nuclear transporters •
- Reactor and component vendors
- Waste management companies •
- Csaba Kiss, Hungarian Nuclear Forum, Hungary Carl Berglöf, SAFO, Sweden •
- Robert Leclère, BNF, Belgium



Director General







Muriel Glibert NISS Manager



Andrei Goicea Policy Director



Jessica Johnson Communication & EU Stakeholders Director



Nathan Paterson Sr Technology Adviso



Berta Picamal DG Office, Legal & Intl Relations Director



William Ranva ENISS Director



Witold Strzelecki Communications Manager



Aude Van Hille Reception Assistant



October /2020

РЕВМАИЕИТ



Throughout the pandemic, workers in the nuclear industry have been doing their utmost to keep Europe's lights on by providing Europeans and industry with a stable and secure supply of low-carbon electricity where and when it's needed. At the same time, the industry has continued to ensure the highest level of safety both for the nuclear workforce and plants. The sector already had plans in place to trigger emergency measures in the event of a pandemic. As a result, it was able to rapidly implement these measures once the seriousness of COVID19 became evident – and thus ensure the continued operation of all nuclear reactors.

Below is a summary of some of the measures implemented by European nuclear operators:

- Introducing various solutions to ensure that workers' health is not endangered (protective equipment, social distancing, additional shifts),
- Implementing where possible alternative working methods or limiting the number of workers,
- Implementation of business continuity plans to ensure the continuing operation of essential facilities,
- Allowing only essential activities and essential staff to be present at sites,
- Operations are being halted at some facilities where necessary or deemed appropriate to prevent the spread of the virus and protect workers,
- Maintenance operations continue as long as all conditions for ensuring the safety of employees are met,
- Regular evaluation of the strategy, assessing the risks and – if needed – modification of the implemented strategy,
- Close cooperation with national regulators and authorities.

On top of this, the sector has assisted Member States in fighting the pandemic by, for example, donating personal protective suits from nuclear power plants and other equipment (masks) to health authorities, producing face masks and hand sanitizers, and providing financial support of hospitals, police, administrations and other entities fighting the outbreak. Some companies have also provided electricity for free to, for example, hospitals.

More information about what is being done in the nuclear industry can be found <u>here.</u>





Sustainability

The Sustainable Finance Taxonomy remained one of FORATOM's key priorities in 2020. In March 2020, the Technical Experts Group published its final taxonomy report. Its conclusions on nuclear remained the same as in their 2019 draft report: Nuclear is recognised as a low-carbon source of energy which meets the climate mitigation objectives of the taxonomy. However, they were unable to recommend the inclusion of nuclear at this stage as they were unable to assess whether nuclear meets the Do No Significant Harm (DNSH) principles, highlighting in particular the issue of nuclear waste. They did make it clear that they did not feel that they had the necessary expertise to assess nuclear, and therefore their recommendation to the Commission was to establish a group of experts with an in-depth knowledge of the nuclear lifecycle to review this technology with a view to its future inclusion under the taxonomy.

The Commission took on board this recommendation and, in September 2020, mandated the nuclear experts under the Joint Research Centre to conduct this assessment. Once this assessment is complete, two additional groups of experts will review the work and submit an opinion, namely:

- The radiation protection experts under Article 31 of the Euratom Treaty (DG ENER)
- The Scientific Committee on Health, Environmental and Emerging Risks (DG SANTE).

At the time of writing, this work was expected to be finalised by June 2021.

At the end of the year, the Commission published the draft of the first delegated act (DA) covering the climate mitigation and adaptation aspects of the taxonomy. This was followed by a one-month public consultation to which FORATOM responded. In a nutshell, FORATOM raised two main concerns. First of all, whilst the DA makes one reference to nuclear and the work of the JRC, no clarity is provided as to how (and if) the Commission plans to incorporate nuclear under the taxonomy once the work of the JRC is complete. Secondly, in spite of the reference to technology neutrality, under the energy section different technologies are subject to different criteria and level of scrutiny:

- Certain electricity technologies will have to meet the LCE threshold of 100g CO2e/KWh, such as hydro. Wind and solar are not subject to this criteria. Bioenergy must meet a different set of criteria.
- Under the DNSH criteria, here again a difference is noted. Some technologies must only be in line with existing legislation, whilst for others the requirements are much more stringent.

Given the significant number of concerns raised by a broad range of stakeholders during the public consultation, the DA is now undergoing a review to take on board the feedback.

2020 also saw the establishment of the Sustainable Finance Platform. Whilst FORATOM has not been given a seat on the platform the Commission has suggested that it plans to reach out to FORATOM's expert to participate in subgroups of relevance to us.

Furthermore, in November 2020, the 3rd Draft Proposal of the Ecolabel for Financial Products was published, followed by a public consultation. Having reviewed the latest draft, FORATOM was concerned by the proposal that companies which obtain more than 5% of their revenue from nuclear will not be eligible for this ecolabel (to be noted that for oil and gas the threshold is much higher: 30%). This proposal would result in the exclusion of some of the most decarbonised utilities in Europe, which is surprising given that the goal of the ecolabel is to direct finance towards low-carbon activities. The draft does note that work under the taxonomy has yet to be finalised, and that the JRC is working on the nuclear assessment. And yet, the authors openly recognise that the decision to exclude nuclear was taken (unanimously) by the EU Ecolabel Board (EUEB) in spite of the fact that they themselves admit that they have no scientific justification for this exclusion. Ultimately, the draft concludes that it will be up to the Member States to take a final decision on this. FORATOM responded to the consultation, highlighting its concerns on the approach adopted.

Green Deal

Launched at the end of 2019, the EU's Green Deal contains a number of ambitious packages with the goal of transitioning to a clean and circular economy. Several of the proposals which have stemmed from the Green Deal are of relevance to the nuclear sector. As such, in addition to monitoring developments, FORATOM responded to several of the public consultations including those covering the following:

- 2030 Climate Target Plan
- European Climate Law
- European Climate Pact
- EU Strategy dedicated to Climate Change Adaptation
- Energy Taxation Directive
- EU Strategy for Energy Sector Integration

One of the key files which came out last year under the umbrella of the Green Deal is the EU Hydrogen Strategy. In its response to the public consultation relating to this topic, FORATOM highlighted the need to ensure that lowcarbon hydrogen is categorised according to the carbon intensity of the source used to produce it, rather than by type of technology itself. In this respect the Association noted that hydrogen produced with nuclear electricity (via electrolysis) can be considered a mature low-carbon economic option. Following on from this, FORATOM joined the Clean Hydrogen Alliance set up at EU level and established an internal Ad Hoc group to develop a position paper dedicated to the role of nuclear in terms of hydrogen production. The position is expected to be released in Q1 of 2021. The Just Transition Fund was another file which FORATOM paid attention to over the course of the year. Launched in January 2020, its goal is to provide financial support to coal-dependent regions in order to assist them in their decarbonisation efforts - under the notion of 'leaving no one behind'. Regrettably, the Commission's original proposal excluded such funds from being used for the construction and decommissioning of nuclear power plants. Whilst recognising that, given the limited size of the fund, it would prove difficult to finance the construction of a nuclear power plant, FORATOM was concerned that this proposal sent the wrong message. Indeed, if the EU is serious about helping regions transition to a low-carbon economy, then it makes no sense to exclude nuclear, which provides the highest share of low-carbon electricity in the EU. But despite recognition from several Member States and the Members of the European Parliament (MEPs) that this exclusion was unjustified, the proposal remained unchanged and nuclear is thus excluded.

Furthermore, given the increased climate target ambitions, FORATOM decided to update it's Pathways to 2050 study. Consultants Compass Lexicon are currently updating the study in order to take into account two new factors. The first of these relates to the EU's decision to increase its CO2 reduction targets to at least 55% for 2030 and to net zero by 2050. Secondly, is the fact that the EU's long-term scenario now focuses on the 27 Member States due to Brexit. The results of this update are due to be completed by Q1 2021.

State Aid

In November 2020, the Commission (EC) launched a public consultation regarding the revision of the guidelines on state aid for environmental protection and energy (EEAG) together with a call for contribution towards a greener competition policy. The aim of the EEAG guidelines consultation was to identify whether current EU State Aid legislation is compatible with the European Green Deal objectives whilst at the same time preventing distortions of trade and competition. In its response to the consultation, FORATOM underlined the need to ensure that EU legislation maintains the principle of technology neutrality by applying an evidence-based approach to State Aid decisions.

Regarding the consultation on greener competition policy, the Commission requested ideas and proposals from a broad range of stakeholders including competition experts, academia, industry, trade associations and nongovernmental organisations. In its response, FORATOM called for a more cautious approach when using state aid rules to promote environmental objectives, highlighting that such rules should not be amended specifically for Green Deal purposes. The contributions fed into a conference held on 4 February 2021 and later on this year the Commission will publish a report based on the responses to the consultation. FORATOM is concerned by the fact that the Commission is considering incorporating the Sustainable Finance Taxonomy criteria within the state aid rulebook. Given that the taxonomy is not yet finalised – and that some technologies such as nuclear have yet to be included - it is too early to be considering such action in FORATOM's opinion.

Brexit

On 31 December 2020 – and after 4 years of very challenging negotiations - the UK ceased to be a member of the EU. Based on the agreement reached at the very last minute, the UK has now left the EU Single Market and Customs Union and is no longer bound by EU policies and international agreements. This means that the free movement of persons, goods, services and capital between the UK and the EU has now ended, with the EU and the UK now forming two separate markets as well as two distinct regulatory and legal spaces. This creates barriers to trade in goods and services and to cross-border mobility and exchanges that did not exist before.

Throughout 2020, FORATOM remained in close contact with the Commission's Task Force UK (TFUK) with the goal of highlighting the industry's concerns and explaining how the establishment of a nuclear cooperation agreement (NCA) would allow for a undisrupted cooperation between the parties, which was until the very last moment still in question. The sector is satisfied with the NCA reached as it remains separate from the trade and cooperation agreement and follows the logic of the Euratom Treaty as a separate legal entity from the Treaty on the EU (TEU) and Treaty on the Functioning of the EU (TFEU). The cooperation in peaceful uses of nuclear energy envisaged between the Parties under this NCA include:

- Facilitating trade and commercial cooperation;
- The supply of nuclear material, non-nuclear material, and equipment;
- Transfer of technology, including supply of information relevant to this Article;
- The procurement of equipment and devices;

- Access to and use of equipment and facilities;
- Safe management of spent fuel and radioactive waste, including geological disposal;
- Nuclear safety and radiation protection, including emergency preparedness and monitoring of levels of radioactivity in the environment;
- Nuclear safeguards and physical protection;
- Use of radioisotopes and radiation in agriculture, industry, medicine and research; in particular, in order to minimise the risks of shortage of supply of medical radioisotopes, and to support the development of novel technologies and treatments involving radioisotopes, in the interest of public health;
- Geological and geophysical exploration, development, production, further processing and use of uranium resources;
- Regulatory aspects of the peaceful uses of nuclear energy;
- Research and development.

However, as of today it is still too early to say whether everything will run smoothly. Only time will tell whether these arrangements are sufficient or if improvements will need to be implemented within the limits of the overarching legal frameworks.

Financing New Nuclear Projects

Over the course of the year, FORATOM ran a project dedicated to the financing of new nuclear projects. The work was undertaken together with a group of financial experts from the industry. The work focused on reviewing lessons learnt from existing projects and the sharing of practices at the level of financing negotiations between project promoters, lenders, shareholders, contractors. A series of meetings and exchanges took place with the European Investment Banks and other large financial institutions, senior credit analysts and investment bankers in order to identify the tools and methodologies investors and agencies use when assessing the credit quality of an investment in nuclear activities.

Based on the feedback received, the group prepared a report which includes a series of key industry takeaways relating to previously identified financing challenges. The final report is due to be published in Q1 2021.

ESPOO & Aarhus Conventions

ESPOO Convention

In 2020, the ad hoc working group set up by the Working group on Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) 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 met several times. The guidance looks at the requirements under the Convention to conduct a transboundary environmental impact assessment procedure and its relevance for the lifetime extension of nuclear power plants. Here it should be noted that requirements relating to nuclear safety fall outside of the Convention's scope and therefore also outside of the scope of this guidance. In December 2020, the Meeting of the Parties adopted the guidance submitted by the ad hoc group (entitled "Guidance on the applicability of the Convention to the lifetime extension of nuclear power plant).

Aarhus Convention

In 2020, the Commission put forward a proposed revision of Regulation 1367/2006/EC which deals with the application of Aarhus provisions at EU level. This revision was triggered by the fact that the Aarhus Convention Compliance Committee found the EU to be in breach of the Convention. The revised proposal extends the scope of administrative acts to encompass more general matters. In addition, any act which potentially goes against EU environmental law – regardless of the policy area – may now also be challenge. Furthermore, it extends the deadlines which civil society have to request a review, as well as the time which EU bodies have to respond to such a request. The EU hopes to adopt the revised regulation in time for the next Meeting of the Parties in October 2021.

Supply Chain Optimisation

In 2020, FORATOM worked with its members to produce a report which outlines options for enhancing the nuclear sector's competitiveness and harmonisation via a common supply chain methodology for use of "high-quality industrial grade" items. During the course of the year, workshops dedicated to national supply chain project initiatives were also organised with several relevant stakeholders. Following on from the publication of the report, FORATOM decided to initiate a dedicated project to develop a European guideline which includes a common methodology for the acceptance of high-quality industrial grade items in certain safety classified applications. The project was successfully launched in Q4 in collaboration with the project steering group. The guideline drafting will

Nuclear Innovation, Research & Development

Throughout 2020, the EU continued to work on preparing and implementing the Horizon Europe Research & Innovation (R&I) programme which runs from 2021 to 2027. As part of this work, the Commission published its implementation strategy in April 2020. FORATOM contributed by responding to the relevant consultations and engagement with stakeholders in DG RTD. It should be noted that the strategy does give some indication as to how Horizon Europe will foster synergies with other EU spending programmes. However, with regards to the Euratom Research & Development (R&D) programme, currently synergies are only foreseen between the two programmes in relation to the health cluster. Nevertheless, in FORATOM's opinion there is potential for this to be expanded further to cover cross sector digitalisation, advanced manufacturing and sector coupling for hydrogen production.

As a result of the COVID crisis, the EU had to revise its proposed Multiannual Financial Framework (EU budget) in order to take into account its COVID recovery plan (NextGenerationEU). Further to negotiations with the Council, Horizon Europe has a total budget of €95.5 billion for 2021-2027 (current prices, including 5.4 Bn from NextGenerationEU). This figure is 30% higher than the previous programme. take place throughout 2021 and will include consultation with a broad range of stakeholders such as the regulatory community, suppliers and licensees in order to galvanize support for future implementation of the guideline by interested stakeholders.

Other notable supply chain activities included providing input to a report commissioned by DG ENER entitled "Resilience of the critical supply chains for energy security and clean energy transition during and after the COVID-19 crisis", as well as interactions with the development of the IAEA Technical Document "Acceptance Process of Commercial Grade Items in Nuclear Power Plant" and collaboration with the Commission's Joint Research Centre to establish a workshop on Commercial Grade Dedication.

However, the revised MFF has had a negative impact on the proposed budget for the next Euratom R&D programme, which is now €1.98bn (compared to €2.4bn previously). The regulation for the next Euratom programme which covers 5 years was finally agreed in Council at the end of the year. This splits into 3 budgets:



Only 19% of the total budget will be for fission R&D. Based on previous Euratom funded programmes, if the same direction is taken it is possible that only 10% of the total Euratom budget will go towards fission power public R&D. Therefore, this highlights the importance to establish synergies with Horizon Europe, Digital Europe and other EU R&I opportunities to enable funding towards such areas as medical, space and other non-power related applications as a means to allow more of the Euratom fission budget to fund fission power R&D projects.

Also, FORATOM in collaboration with SNETP, provided key inputs as part of the EU SET plan reporting.

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Small Modular Reactors (SMR)

In October 2020, an SMR Task Force initiated work on a position paper dedicated to SMR technologies. The document will focus on four main areas:

- Technology developments
- Economics

Non-Power Applications of Nuclear

In 2020, FORATOM teamed up with Nuclear Medicine Europe with the goal of preparing a position paper dedicated to the medical uses of nuclear technology. The plan is to raise awareness at EU level about how nuclear technologies are used in the field of medical diagnosis and treatment. The paper will aim to provide an overview of the nuclear medicine sector in Europe, as well as

Education & Training

In 2020, FORATOM became a member of the European Human Resources Observatory for the Nuclear Sector (EHRO-N) Senior Advisory Group. EHRO-N is a unit under the Commission's Joint Research Centre dedicated to the knowledge management of competences and human resources in the nuclear sector.

In addition, in September 2020 FORATOM issued a position paper dedicated to skills. The goal was to highlight the importance of maintaining a skilled nuclear workforce,

- Market integration
- Licencing and regulatory (in collaboration with ENISS)

The goal of this work is to provide support to the development of SMR technologies in Europe.

highlighting the main challenges which it currently faces, including potential risks. In addition, the two associations will prepare a series of policy recommendations in order to ensure that a stable supply of nuclear medicine produced using nuclear technology can be guaranteed and maintained in the European Union.

particularly in both the energy and medical fields. With this in mind, FORATOM outlined a series of actions to be undertaken by the industry itself as well as several policy recommendations. The sector is currently focusing on two key issues. First of all, identifying ways of rendering itself more attractive to young people. Secondly, the upskilling and reskilling of workers from other industries with the goal of reconverting them into the nuclear sector.



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 and radioprotection indirect actions, i.e. open to nuclear industry participation, is €316 million from 2014-2018.

Below is an overview of some of the EU funded projects in which FORATOM is involved.

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. Due to COVID, trainings were suspended in 2020, however depending on the evolution of the pandemic there are plans to restart them in 2021.

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 \in 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 \in 3.2 million (due to COVID, this project has been extended beyond its initial 3 years). 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 developed a communications strategy aimed primarily towards both industry and policy makers. It focuses on ensuring that adequate emphasis is placed on attracting, developing and retaining nuclear talent. Further to a workshop in 2019, FORATOM and ENEN began to develop an intranet containing useful communication tools which can be used by all the partners, depending on the audience to whom they plan to reach out to.

RIMA - Robotics for Inspection and Maintenance

FORATOM is actively involved as a partner in the RIMA project, funded under the Horizon 2020 programme, focused on driving innovation in robotics for inspection and maintenance (I&M). FORATOM facilitates the network and works on raising awareness of how the project can support challenges in the nuclear industry. It also facilitates the development of experiments and demonstrations inside the RIMA project and provides guidance to potential participants. The main objective of the project is to reinforce Europe's leadership in I&M robotics by fostering efficient cooperation. FORATOM's role is to bridge the gap between SMEs, within the robotics community, and potential end users within the nuclear industry (licensees, I&M service providers, operators).

In 2020, FORATOM participated in the assessment of the first calls for projects relating to the development and deployment of robotic I&M applications with equity-free funded grants. Out of the 19 projects approved under RIMA, three are nuclear-related and focus on robotic solutions for remote weld inspection, remote handling and dismantling operations and remote area mapping. Towards the end of the year FORATOM hosted a webinar on robotic applications within the nuclear industry and highlighted the opportunity for more nuclear related projects to be funded in the next open call launched in December.

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 2019 and 2020, ENISS had the opportunity to exchange views with WENRA on the revision of their Safety Reference Levels (SRLs) related to ageing management, and leadership and management for safety. The 2020 revision of the 2014 SRLs were approved during the WENRA November plenary meeting.

WENRA has been tasked by ENSREG with putting forward a shortlist of topics for the 2nd Topical Peer Review (TPR) according to the EU Nuclear Safety Directive. ENISS has been invited to provide feedback on WENRA proposed topics.

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).

ENISS also participated in the International Conference on Radiation Safety that took place in November 2020 and delivered a presentation, demanding more pragmatism in radiation protection.

International Commission on Radiological Protection (ICRP)

ENISS responded to the International Commission on Radiological Protection (ICRP) consultation on the draft report entitled Radiation Detriment Calculation Methodology.

European Nuclear Safety Regulators Group (ENSREG)

ENSREG has been working on drawing up a questionnaire for ENSREG members to provide their opinion on the Topical Peer Review (TPR) process and to put forward their ideas and suggestions for topics for the next ENSREG TPR. ENISS had the opportunity to respond to the questionnaire and suggested that maintaining expertise and skills in nuclear safety was a relevant topic to be examined within the next TPR. ENSREG selected at its November plenary meeting Fire protection in nuclear installations as the topic for the second TPR which will take place between 2023 and 2024. The TPR technical specifications will be developed in collaboration with WENRA. Relevant stakeholders, including ENISS, will be consulted during the preparation of the TPR specifications.

Position papers

In 2020, ENISS issued a new position paper on the application of the concept of Practical Elimination of scenarios. Besides this, ENISS also started developing position papers on other technical issues such as the

optimisation principle, health risks from exposure to ionizing radiation and transition from operation to decommissioning.

ENISS Strategic Plan

The ENISS Strategic Plan, describing among other things ENISS ambition, missions and objectives, has been revised and published on the ENISS website.

COMMUNICATIONS & STAKEHOLDER ENGAGEMENT



COVID19 accelerated the use of online tools to enable a dialogue with Brussels-based stakeholders. In this respect, FORATOM continued to promote its key messages via its website and social media accounts with the goal of:

- clearly positioning the association as the voice of the European nuclear industry in Brussels,
- promoting nuclear as part of the solution when it comes to climate change, jobs and growth, and security of energy supply,
- continuing to gain recognition of the value of nuclear in relevant EU polices.

Below is an overview of the new communication tools developed in 2020.

Widget

In February 2020, FORATOM launched an <u>online tool</u> which provides daily information about electricity production across the EU. It includes data on electricity generation as a whole per source and the share of low-carbon electricity. The information is available in both an aggregated format as well as by Member State, and confirms that nuclear remains the largest source of low-carbon electricity in the EU.



Waste toolkit

The Sustainable Finance discussions showed the need for a tool which provides a clear explanation as to how the nuclear sector handles its waste. Developed in 2020, the tool provides an overview of the amount of nuclear waste generated across the EU. In addition, it presents some of the waste management techniques applied by the industry in order to reduce the amount of waste generated, as well as reusing and recycling options. Finally, it aims to provide clarity on the projects in place to handle residual waste. More info.





Webinars

In light of the crisis FORATOM moved all its events online. During the summer it organised a series of three webinars relating to the role which nuclear plays in terms of enabling a constant supply of low-carbon electricity during the pandemic. The first focused on the measures implemented within the sector itself. The second looked at how COVID19 has impacted the electricity market and networks and ways in which these could be rendered more resilient. The final one aimed to identify the policies which will support sectors capable of generating clean economic growth and jobs in Europe as we come out of the crisis and how it will support economic growth and job creation.

Below is an overview of some of the traditional tools which FORATOM continued to make use of in order to support the association's advocacy goals.

FORATOM in the news



FORATOM views

FORATOM selects new President Esa Hyvärinen Jan 10, 2020



Brussels, 10 January 2020: FORATOM is pleased to announce that Esa Hyvärinen has been appointed by the association's General Assembly as FORATOM President for a two-year period starting on 1 January 2020.

"I feel deeply honoured to be appointed as the new pres nt of FORATOM and I look forward to the next two years working with the General Assembly, Executive Board, FORATOM Members and the Secretariat as well as all external stakeholders involved in the European decision-making process" - states Mr. Hyvärinen. "Even though the European Commission and the European Parliament have recently recognised nuclear energy as an important element of Europe's decarbonised future, the European nuclear industry will face many challenges in the upcoming months and years in order to maintain and improve its current role in the energy mix. That is why we will do our best to convince decision makers that v-carbon, cost-effective and reliable nuclear energy can help the EU achieve its climate and energy objectives

EU education & training policy must support nuclear skills Sep 29, 2020

Brussels, 29 September 2020: In order to ensure that the European nuclear industry can continue to provide both vital medical diagnosis and treatment, as well as low-carbon energy, it needs people with the right skills. According to a new position paper issued by FORATOM, EU education and training policy must do more to ensure that there is a sufficient number of people with the right skills in the nuclear field.

ety is facing significant challenges in terms of climate change, access to affordable energy, health and employment. The European nuclear sector stands ready to meet these challenges. However, it is facing a skills shortage, particularly given that a significant part of the workforce is reaching retirement-age and will have to be replaced in the near term. In addition, the implementation of, for example, digitalisation will require the reskilling and rkers. The industry, as well as policy makers at both EU and Member State level must work together upskilling of w to ensure that Europe can maintain its highly skilled nuclear workforce, thus ensuring long-term benefits for our society.

FORATOM underlines key role of nuclear in achieving ambitious climate targets

Sep 16, 2020

Brussels, 16 September 2020: FORATOM welcomes the European Commission's proposal to increase its 2030 CO2 emission reduction target to at least 55%. This is essential if the EU is to achieve carbon neutrality by 2050. The nuclear sector stands ready to play its part by providing a stable supply of low-carbon electricity, as well as other energy carriers (e.g. hydrogen).

In terms of decarbonising the electricity sector, FORATOM has identified two challenges: ensuring security of supply and costs.

"It is clear that by supporting an energy mix which combines both nuclear power and variable renewables, the EU will have access to a low-carbon supply of electricity, 24/7" states Yves Desbazeille, FORATOM Director General. "Such a combination will contribute not only ensuring security of supply, but also keeping the costs of the transition to a minimum"

Commission mandates JRC for nuclear assessment under taxonomy

Jul 3, 2020

Brussels, 3 July 2020: FORATOM welcomes the European Commission's decision to appoint the Joint Research Centre (JRC) as the group of experts which will assess nuclear under the sustainable fin taxonomy. In its communication on this issue, the Commission has made it clear that the assessment should be scientifically rigorous, transparent, balanced - and reflect the principle of technology neutrality.

"This shows that they have taken recommendations that nuclear be assessed by scientific experts seriously" states Yves Desbazeille, FORATOM Director General. "This is something which many stakeholders - including industry, ral Member States and MEPs – have been calling for over the past year."

IEA & NEA report confirms nuclear as the most affordable dispatchable source of low-carbon electricity

Dec 9, 2020

Brussels, 9 December 2020: FORATOM welcomes the conclusions of the latest IEA and OECD NEA report entitled 'Projected Costs of Generating Electricity 2020', According to the report, nuclear remains the most dispatchable low-carbon technology with the lowest expected costs in 2025. Furthermore, the report shows a decline in costs for new nuclear power plants compared to the previous edition. This is thanks to lessons learnt from recent first-of-a-kind new build projects.

*FORATOM is delighted with the IEA's confin tion of the fact that the long-term operation of nuclear p remains the cheapest source of electricity across the board", states Yves Desbazeille, FORATOM Director General. "This is something that FORATOM has been emphasizing for several months and in particular during the 2030 climate targets debate. The report demonstrates that nuclear remains a highly viable partner in the transition to an affordable decarbonised economy.

EU Court confirms Hinkley Point State Aid legally valid Sep 23, 2020

Brussels, 23 September 2020: FORATOM welcomes the European Court of Justice's ruling that the subsidies granted by the UK to Hinkley Point C are in line with EU rules. This ruling comes after Austria - ren ned for its anti-nuclear stance - took the European Commission to court for approving state aid to this project.

"FORATOM is delighted to see the ECJ re-affirm its support for the Commission's decision to approve state aid for lear power" states Yves Desbazeille, FORATOM Director General. "Given the challenges which Member States are facing in terms of decarbonising their power sector, whilst maintaining security of supply, for many, and as indicated in their very recent NECPs, nuclear is seen as an important part of the solution"

FORATOM welcomes improvements in hydrogen categorisation

Jul 9, 2020

Brussels, 9 July 2020: FORATOM has taken note of the two strategies released yesterday in relation to smart sector integration and hydrogen. The Association welcomes the addition of a 'low-carbon hydrogen' category but its usage should not be limited to the short and medium term. We nevertheless remain concerned that the insufficient attention is paid to low-carbon, non-fossil fuel sources of hydrogen, such as nuclear.

"Nuclear is a very versatile and proven technology, providing low-carbon electricity that can be used for the production of clean hydrogen and heat for industrial processes or district heating. For example, in 2018, around 350 gigawatt-hours (GWh) of electrical equivalent heat of district heating and process heat was generated in the EU and Switzerland." states Yves Desbazeille, FORATOM's Director General. "Given the huge challenge which Europe will face over the next 30 years, it is essential that policymakers do not focus only on variable renewables. Transforming our energy system is going to require ALL low-carbon solutions cu rently available. And EU policy must reflect this."

FORATOM calls for European Commission to support EU Nuclear Supply Chain harmonisation Jun 10, 2020

Brussels, 10 June 2020: A strong and diversified supply chain is essential to ensuring high levels of safety, quality and reliability in the nuclear industry. According to a report published today by FORATOM, the European Commission should acknowledge the importance of harmonising the European Nuclear Supply Chain and support EU Member States in reviewing their regulatory framework to enable the use of modern high-quality components manufactured for other industries. A strong and harmonised European nuclear supply chain can also help the EU revive its economy following the COVID-19 outbreak.

26% of the electricity produced in the EU comes from nuclear energy and it remains the largest source of low-carbon ver, the average age of the nuclear fleet in Europe is 35 years and w (LTO) of nuclear power plants, 90% of current nuclear capacity will be shut down by 2035 and will thus need to be

social media



Outreach to the European Parliament

FORATOM continued to reach out to Members of the European Parliament on key files of importance to the sector. Contacts were primarily maintained with the ITRE, ENVI and REGI committees and covered, in particular, the Sustainable Finance Taxonomy, the Just Transition Fund and the Hydrogen Strategy. Furthermore, FORATOM became a partner of the Sustainable, longterm Investments & Competitive European Industry intergroup.

INTERNATIONAL PRESENCE

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 2019.

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 has provided secretariat support to the SNETP as part of its transition to a formal entity with NUGENIA and a new board. This has included dissemination activities and strategic guidance for activities related to the SNETP management. In this capacity FORATOM has participated a Strategic Energy Technologies (SET) plan meeting organised by the EC with all the other SET plan technology platforms. The objective of the meeting was to strengthen collaboration and engagement in the formal monitoring and reporting of R&D activities under all the SET Plan areas. As a result of the input provided, the 2020 edition of the SET report includes references to the potential synergies between the different low-carbon energy sources and the acknowledgement of nuclear R&I as key aspect within the EU strategy for low-carbon energy.

MARK YOUR CALENDAR

UCLEAR AT A CROSSROADS: WHERE TO NEXT?

JOIN US ON 14 & 15 JUNE 2021 FROM 09.45 – 13.00 FOR OUR ONLINE EDITION OF #NUCLEAREUROPE2021!

JOIN US ON 7-9 SEPTEMBER 2021 FROM 13.00 – 16.00 FOR OUR ONLINE EDITION OF

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