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MESSAGE FROM MEP ONDŘEJ KNOTEK



2021 reminded us that the energy transition and our path towards 2050 climate neutrality will not be easy and will come at a cost. Pandemics, steeper energy bills and growing global political tensions have shown us the crucial importance of the EU's strategic autonomy. It has not been only a game changing moment, but it is also giving us an opportunity to consider once again how we have to approach our decarbonisation plans. MEPs and the Brussels bubble received a toy to play with in the form of the Fit for 55 package. While intensive short-term focused political talks are being held in the EU's "ivory tower" institutions, the unprecedented risk of energy poverty has spread across the EU. Underestimating this situation could have major consequences on the success of EU and global action towards achieving climate neutrality by 2050.

Some political groups are pushing forward ideologically driven policies and calling for more ambition without considering the science and without understanding the complex impact these policies could have across the different EU Member States. Public support for the European Green Deal is not a done deal and can be lost easily due to populist policies. We should not forget that whilst reaching climate neutrality in 2050 is a key milestone, it is NOT the end of the road. Energy demand will

most likely continue to grow beyond 2050 and renewable sources alone will not be able to meet this demand due to certain limitations. Furthermore, they will be unable to provide operational stability within publicly acceptable costs.

Nuclear energy represents a necessary solution as it complements renewable sources and helps to build a stable, cost effective and strategically autonomous EU energy ecosystem. The EU needs nuclear energy not only to reach climate neutrality by 2050, but also to maintain it over the decades to come post 2050. Taking all this into consideration, together with new technology developments and a shift in public opinion, nuclear energy should gradually be treated on an equal footing with renewable sources in terms of grants and financial instruments by the end of this decade.

The success of the climate transition will be determined by an open minded approach which respects technology neutrality. It is legitimate to debate and address the potential risks of all energy sources. The EU's sustainable finance framework currently considers 2nd and 3rd generation of fission reactors as "transitional" and imposes specific conditions. However, we must not overlook promising scientific evolution in the nuclear sector. Future nuclear fission technologies (e.g. taxonomy compliant 4th generation reactors) could bring about a further reduction in nuclear waste generation, increased fuel stability and very important circular economy elements.

When it comes to fusion technologies, the progress is visible and promising. A recent MEP visit of the ITER site sends a strong message to the private sector that the EU believes in nuclear technologies.

I have noticed that the approach to nuclear has been changing somewhat recently in Europe and some are even talking about a nuclear renaissance. So let's try to work together to make it happen!

Ondřej Knotek, Member of the European Parliament (Renew Europe, Czech Republic)

MESSAGE FROM OUR PRESIDENT

Energy management has always been a fundamental issue that has influenced the development of our societies, the well-being of citizens, the efficiency of our businesses and sometimes led to geopolitical tensions and even conflicts. The industrial revolution of the 19th century, associated with the development of coal mining, or that of the beginning of the 20th century, with our economies becoming increasingly dependent on oil, are the most striking illustrations of this.



Recurrent themes linked to energy management can be summarised as follows:

- Reliability of access to resources (fuels and associated technologies), symbolised by the question of energy sovereignty, Member State dependence on third countries and, as a result, their possible geopolitical weaknesses.
- Ability to provide an uninterrupted and sufficient supply of electricity, gas and oil to all players within a country, via power plants and efficient distribution networks.
- The price charged to private individuals is likely to hamper purchasing power if it increases too much.
- The price of competitive access to energy for companies, a factor which affects competitiveness and therefore jobs.
- The ability of a country to capture a significant part of the added value necessary to benefit from an efficient source of energy. Massively importing gas or oil does not generate the same amount of GDP as having a strong nuclear power industry.

• The environmental credentials of the energy consumed, making it possible to meet climate objectives, namely a carbon-free trajectory for our economies. This last theme is a more recent one because it has only been linked to energy since the international summit in Rio, that is to say 30 years ago.

Looking at the current situation, we can learn many lessons and face up to our responsibilities:

- Geopolitical stability is never permanently acquired. The situation in Ukraine demonstrates this and the
 consequences are immediate: soaring fossil fuel prices, implementation of economic sanctions, fear of
 insufficient capacity to supply EU countries with gas, etc.
- The ability to produce enough electricity during the coming winters (particularly 2022-2023) has not been demonstrated: gas reserves within the EU are low, Russian supplies raise many questions and many countries will need significant quantities to supply combined-cycle gas plants. Use of such means of production is being reinforced by the gradual phase out of coal-fired power plants and the closure of certain nuclear power plants (Germany and Belgium). We are undoubtably reverting towards a time of large-scale power cuts, similar to the 1970s and 1980s, with citizens less prepared for such episodes and an ever-stronger dependence of our economies on electricity.
- Inflationary pressure, triggered in particular by energy prices, generates negative social reactions. This threat, together with the risk of power cuts, could lead people to question the establishment of a free electricity market, which is normally seen as a source of greater efficiency and formed the basis for the creation of the EU in 1957. EU cohesion could suffer and reinforce the risk that some Member States may be tempted to leave the EU.
- The definition of a "European Green Deal" by the European executive has been structured around very concrete elements: Taxonomy, the Fit for 55 package, etc. It clearly shows that we are at the dawn of a profound energy policy transformation in each of the EU Member States. The pillars upon which this transformation is based are increase in energy efficiency, increase in the use of renewable energies, drastic reduction in CO2 emissions based on the development of electricity and innovative low-carbon means such as hydrogen or storage.

As mentioned, the world of energy in general, and that of electricity in particular, is at the crossroads of political, industrial and scientific worlds. Science and experience clearly demonstrate that:

- The share of electricity in the energy mix must continue to grow in order to reach the "net zero" objective in 2050.
- The development of renewable energy is necessary in all EU countries. In order to avoid the risk of a blackout, it must be accompanied by dispatchable, low-carbon generation facilities as long as low-carbon and economically competitive means of storage remain unavailable.
- CO2 intensive technologies will not have competitive access to Carbon Capture solutions for a long time
 to come, so they will not offer a solution for European energy mixes for many decades. Furthermore,
 combined-cycle gas plants would require increased dependence on third countries that are not always
 geopolitically reliable and would subject our economies to the risk of high price increases, such as the
 energy shock currently being experienced.
- The current electricity mix of the EU Members States must clearly address on CO2/kWh production, cost stability, added value captured within the EU, local job creation, energy consumption and purchasing power. Not all solutions are equal and the only one that responds positively to all the points which need to be addressed in our energy policy is the mix which combines renewable energy with nuclear energy.

The role of nuclear energy is therefore vital for the EU and around half of Member States share this analysis. Several countries have ambitious projects to develop or extend nuclear facilities. A recent Joint Research Center report produced as part of the development of the new sustainable finance taxonomy confirms that this is the right choice, and that it is scientifically justified.

The taxonomy complementary Delegated Act, which could be adopted during the first half of 2022, recognizes nuclear as one of the resources needed to ensure a balanced energy mix. And yet, the instability it generates by

treating nuclear as a transitional technology, and subjecting it to periodic reviews of its status and the establishment of maximum time horizons during which projects can be launched (sunset clauses), goes against regulatory stability and temporal visibility for this long-term industry.

Now, more than ever, FORATOM's actions must focus relentlessly on several key areas aimed at stabilising a favorable legal and financial framework at European level in order to:

- Guarantee access to attractive financing for both new projects and those which aim to extend the lifetime of existing reactors by revising the taxonomy in order to ensure nuclear energy plays a role in the long-term.
- Stabilize the existing regulatory framework by preventing the European Commission from interfering in the choice of technology being made by Member States and national regulators. As such, the imposition of an improved fuel before 2025, when it has not been licensed by any nuclear regulator in the world, illustrates that the Commission must not arbitrate on these important, but complex, scientific choices.
- Provide Member States, electricity operators and the supply chain with the right conditions which will enable them to retain employee skills and invest in innovation in the nuclear sector, as other major powers are doing. Small Modular Reactors (SMRs) are just one example whereby far too many of the positive intentions of the Commission are simply not followed through with significant budgetary allocations which will allow for the development of a large European SMR sector. The future development of Generation III reactor projects or the preparation of Generation IV reactors are another example of where very few research and development activities are being financed via EU funds.
- Help define business models for SMR uses (production of electricity, heating, hydrogen generation, etc.).

There is a lot of work to be carried out and this will require courage, self-sacrifice and collective perseverance because of the significant ideological opposition – in spite of the fact that this ideology is often not science based and, above all, does not provide satisfactory answers to the fundamental questions of energy management addressed above.

We are certain that nuclear energy is part of the ideal mix of the future and it must have its place among those EU Member States who want to use it.

In this particular and historic period, FORATOM will play an essential role in ensuring that nuclear energy gains its rightful place, backed by the support and commitment of its members. The vital issues mentioned above go far beyond those of traditional lobbying in order to gain financial and/or legal advantages.

Jean-Marc Quilichini, FORATOM President

MESSAGE FROM OUR DIRECTOR GENERAL



Over the last 6-9 months it has become increasingly evident that Europe is facing an energy crisis. This crisis is not only likely to continue for another few months, but it will most likely happen again unless the EU is willing to assess the root cause of the problem and focus on implementing viable and long-term changes. One of the main issues is that Europe remains dependent on energy imports, particularly natural gas. This is neither good for the planet (as gas is not low carbon), nor for our wallets (as the massive increase in gas prices has triggered a massive increase in wholesale electricity prices).

The main reason why gas prices are so high is the lack of adequate storage in Europe, coupled with demand driven by post-pandemic economic growth in many countries. To a lesser extent, market prices are also influenced by the EU Emissions Trading System (ETS) where a tonne of CO2 allowance recently reached record prices at over €60. And whilst a high CO2 price is very good news for the climate, it adds up to the perfect storm for energy markets in Europe.

Then comes the fact that in the EU power prices are fixed by 'market calls' from different generation sources which means that the last value called sets the final price for all other generation sources, even if they could sell cheaper. This is how

expensive gas sets the prices even for nuclear generation. Furthermore, power markets are no longer national in the EU which means prices in neighbouring counties can easily influence local market conditions. And then there is also the issue of taxes and levies, with some EU Member States applying a disproportionate taxation system to nuclear facilities.

With the share of renewables continuing to grow across Europe, we need to make sure that we have enough low-carbon, back-up sources available for when the wind doesn't blow and the sun doesn't shine. These sources need to be available in Europe in order to reduce our dependence on energy imports and thus be more resilient to price shocks. Nuclear is the only energy source which can ensure this as it is low-carbon, available 24/7, affordable and above all European. This is why over the past few months we have seen renewed interest in nuclear, with many Member States openly admitting that this technology is needed. Even those which, like Greece, do not have (or plan to have) nuclear facilities.

The long-term operation of the existing nuclear fleet is crucial to meet the targets the EU has imposed itself. While we face difficult situations in certain countries such as Belgium and Spain, some other Member States have become increasingly vocal on the need for nuclear to continue to be valued for what it provides to the system in terms of ensuring security of supply. And here we are clear: there is need for recognition of the fact that nuclear energy is an affordable solution which will help the EU to achieve its climate ambitions and ensure security of supply. Indeed, we strongly believe in a technology neutral assessment of all energy sources as this is the only way of ensuring a sustainable transition.

This includes the development of a market design that supports all low-carbon technologies.

Yves Desbazeille, FORATOM Director General

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 policymakers.

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 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
- 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), Fermi Energia (Estonia), Nuvia (France), PGE EJ1 (Poland), Rolls-Royce led SMR and Urenco (Global) 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
- Hans-Ulrich Bigler, Swiss Nuclear Forum, Switzerland
- Kiss Csaba, Hungarian Nuclear Forum, Hungary
- Teodor Chirica, ROMATOM, Romania

- Denis Dumont, BNF, Belgium
- Christopher Eckerberg, SAFO, Sweden
- Esa Hyvarinen, ET (Past President), Finland
- Jean-Michel Quilichini, GIFEN, France

MEET THE TEAM



Guilherme Cardoso Nuclear Technology Advisor



Sophie Dayraut Junior Communications Manager



Danielle de Crombrugghe-L. Support Team Manager



Graziella De Riddere IT Manager



Yves Desbazeille Director General



Nathalie Foriers Assistant



Muriel Glibert ENISS Manager



Andrei Goicea Policy Director



Quentin Heilmann Junior Legal Advisor



Jessica Johnson Communication & EU Stakeholders Director



Anthony O'Donnell Communications Officer



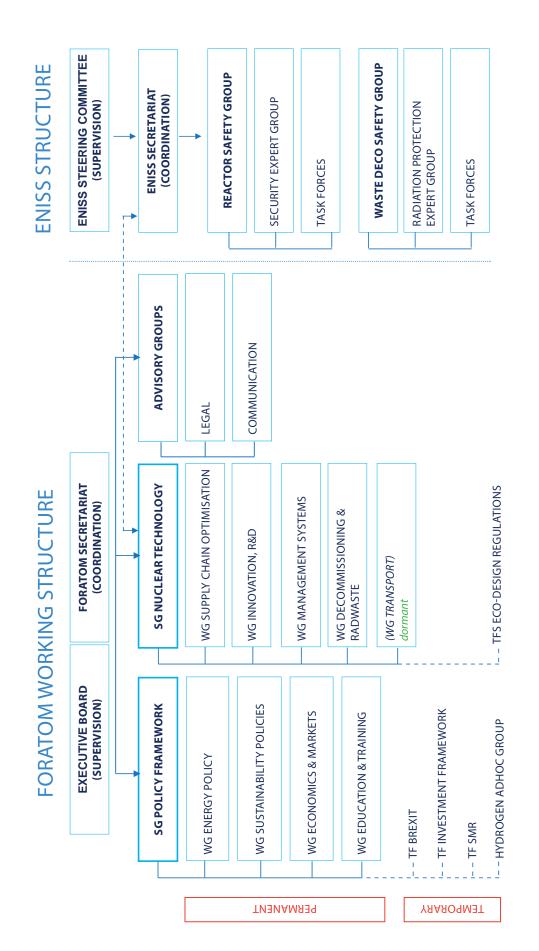
Berta Picamal DG Office, Legal & Intl Relations Director



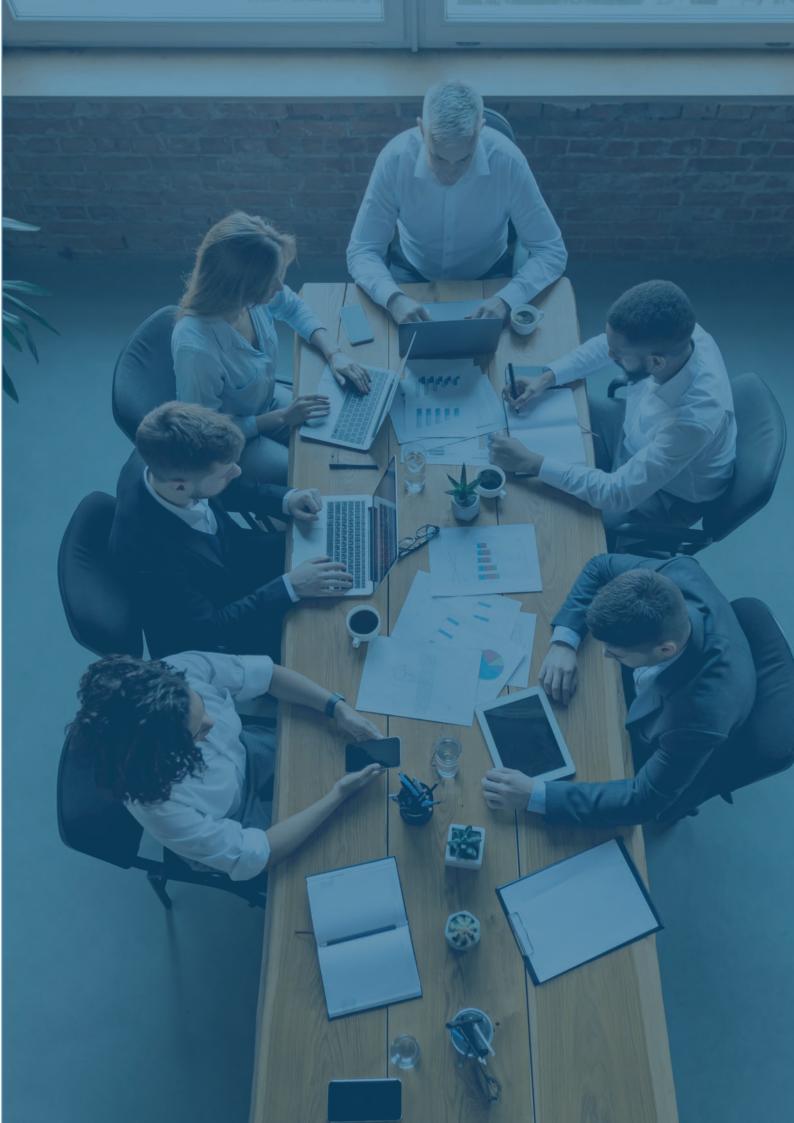
ENISS Director



OUR WORKING GROUPS



October /2020



POLICY FOCUS



SUSTAINABILITY

The Sustainable Finance Taxonomy remained at the top of FORATOM's priorities throughout 2021. As per the request of the Technical Expert Group (TEG), in March 2021 the European Commission's Joint Research Centre published its assessment of nuclear in relation to the taxonomy. The work focused in particular on the so-called 'Do No Significant Harm' (DNSH) criteria as the TEG had already come to the conclusion that nuclear clearly contributes to the climate mitigation objectives. The JRC assessed environmental issues such as water impacts, biodiversity and land use, air pollution and raw material consumption. Particular attention was also paid to the management of radioactive waste, including Deep Geological Repositories as a solution for High Level Waste and Spent Nuclear Fuel.

In a nutshell, the JRC's assessment made clear that nuclear does not cause more harm than any other power-producing technology already classified as taxonomy compliant.

This work was then reviewed by two additional groups of experts, namely the Article 31 Group of Experts in radioprotection and the Scientific Committee on Health, Environment and Emerging Risks (SCHEER). According to the opinions of these two groups (published in July 2021) they broadly agreed with the conclusions of the JRC, although the SCHEER did raise a couple of questions relating, in particular, to potential impacts of mining.

In parallel to this, during the first half of the year the Commission proceeded with the publication of its first taxonomy Delegated Act (DA), covering the climate mitigation and climate adaptation criteria. Because the nuclear assessment was not finalised in time, and the issue of natural gas remained unresolved, the Commission did not include these two technologies in this DA, promising instead to include them under a Complementary Delegated Act (CDA) due later on in the year once the nuclear assessment was complete. Whilst this first DA was approved by both the Council and Parliament in December, many Member States either abstained or voted to reject the proposal,

sending a clear message to the Commission that they were not happy with how nuclear (and gas) were being managed.

As a result of increased pressure on the Commission to follow the science and include nuclear under the taxonomy based on the scientific assessment, a CDA covering nuclear and gas was sent to the Member States and the Sustainable Finance Platform just before midnight on 31 December 2021. FORATOM welcomed the fact that the Commission had, as promised, issued a CDA with nuclear before the end of 2021. Nevertheless, some of the Technical Screening Criteria could prove challenging. For example, they require the use of Accident-Tolerant Fuels which have yet to be licensed and become commercially available. The text also remains vague on whether the ongoing operation and maintenance of existing installations is covered. And the dates proposed for operational Deep Geological Repositories fail to take into account when they will actually be needed, and thus run the risk of having such repositories lying empty for decades. FORATOM worked closely with its members to ensure that all issues were raised with the Commission and the Member States, and we are now waiting to see what the final outcome will be.

Of course, the story does not end here. With it becoming increasingly likely that nuclear would be added to the taxonomy, some Members of Parliament took pre-emptive measures to try and exclude nuclear from the EU Green Bond Standard even if it obtains taxonomy status. We are also waiting to see what the final EU Ecolabel for Retail Financial Products will look like as the Commission took the (right) decision to postpone this file until the nuclear issue was resolved. And we also have the proposal for a Corporate Sustainability Reporting Directive in the table, which will ultimately replace the current Non-Financial Reporting Directive.

As such it seems as if sustainable finance will remain a l'ordre du jour for at least the first few months of 2022.

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. In this respect, 2021 saw the publication of its so-called 'Fit For 55' package which included a broad range of legislative proposals.

The package was issued in two parts, the first in July 2021 and the second in December 2021. It included the following proposals of relevance:

- Revision of the EU Emissions Trading System (ETS). In FORATOM's opinion, this proposal should be revised in such a way that it ensures a stable carbon market and encourages energy-intensive users to shift towards energy sources with a lower carbon footprint such as nuclear.
- Carbon Border Adjustment Mechanism (CBAM). FORATOM believes this proposal could help to ensure that producers located outside of the EU are also encouraged to make use of nuclear energy as a way of reducing the carbon content of products imported into the EU.
- Revision of the Renewable Energy Directive. FORATOM continues to monitor developments on this file, particularly in relation to the issue of guarantees of origin and hydrogen production.
- Revision of the Energy Efficiency Directive. Currently, the EED includes a Primary Energy Factor (PEF) of 3 for nuclear. FORATOM is calling for this to be amended to a more accurate level of 1.
- Revision of the Energy Taxation Directive.
 In FORATOM's opinion, taxation in the field of energy should be revised in order to incentivise a switch towards low-carbon sources, and thus making them more affordable for consumers.

Revision of the Third Energy Package for gas.
 Whilst FORATOM welcomes the inclusion
 of low-carbon hydrogen in the package,
 unfortunately no reference is made to
 nuclear which is capable of producing
 hydrogen with a CO2 content which is
 similar to that of renewables and at a more
 affordable cost.

The 'Fit For 55' package also includes an Impact Assessment for some of the legislative proposals. Regrettably, according to the Impact Assessment, the share of nuclear within the EU electricity mix is expected to be lower in 2030 (15-17%) and 2050 (6%-7%).

Furthermore, as part of this package, the Commission issued a new 2020 EU Reference Scenario. The goal of this scenario (which is based on projections rather than forecasts of how the EU's energy system will evolve) is to assist policymakers in analysing long-term economic, energy, climate and transport outlooks based on the 2020 policy framework (i.e. a renewables target of 32% and an energy efficiency target of 32.5%). Regrettably, the scenario does not fully take into consideration the role which nuclear will play in the future. This is partly due to the fact that the Member States' National Energy and Climate Plans (NECPs) only go up until 2030 whilst new nuclear projects (including Small Modular Reactors) are planned within a longer-term perspective.

As part of its outreach FORATOM communicated on how nuclear can help make Europe fit for 55. Given that the package is limited to 2030, FORATOM focused on the lifetime extension of the existing nuclear fleet and the essential role which it plays in ensuring the adequacy of the EU's power system. In this respect, FORATOM published a position paper entitled "Importance of long-term operation of the existing EU nuclear fleet" in December 2021. As part of its outreach around the Fit for 55 package, FORATOM aims to demonstrate the following:

- Nuclear will help the EU achieve its decarbonisation targets, as it is low carbon.
- Nuclear will enable an affordable transition, as it remains one of the cheapest sources of electricity.
- Nuclear will ensure security of supply, as nuclear power plants run virtually 24/7.
- Nuclear supports a socially fair transition, as it will help industries remain in Europe by providing them with a constant supply of low carbon energy.

Furthermore, at the end of the year, the results of the updated "Pathways to 2050: Role of nuclear in a low-carbon Europe" were published in order to demonstrate the role which nuclear will play in helping to achieve the 2050 targets which the EU has set itself. This update takes into account the following:

- As a result of Brexit, all of the European Commission's new long-term scenarios now focus on the EU27.
- The EU's updated decarbonisation targets for both 2030 (with an increase from 40% GHG emission reductions to at least 55%) and 2050 (from 80 to 95% GHG emission reductions to net zero emissions).

According to the report, the early closure of nuclear would:

- Lead to increased CO2 emissions by 2025, thus hampering the increased 2030 climate mitigation ambition.
- Require new thermal capacities in order to ensure security of supply, triggering an increase in air pollutants as follows:
 - SO2: 7.7% increase in total SO2 emissions over 2020-2050
 - NOx: 7% increase in NOx emissions over 2020-2050
 - Particulate Matter (PM): 12% increase in total PM emissions over 2020-2050
- Require new solar and wind capacities in order to meet environmental objectives, which would generate an estimate derived from the literature of 9890 km2 of additional land requirements or 7% of total land use between 2020-2050.

FINANCING NEW NUCLEAR PROJECTS

In 2021, FORATOM published a report which provides insights into the potential long-term financing of nuclear projects. The work was undertaken together with a group of financial experts from the industry and focused on reviewing lessons learnt from existing projects and the sharing of practices at the level of financing negotiations between project promoters, lenders, shareholders and contractors. The report aims to provide guidance to policymakers and investors approaching financing risks for infrastructure under the transition to a net-zero 2050 economy. Furthermore, it puts forward the following recommendations:

- In the financing of new nuclear projects, the investment rating and the ability to attract debt for new projects have a central role to play.
- Multiple financing mechanisms are required to access a variety of sources of capital.

- A stable and long-term investment policy framework for nuclear optimizes the distribution and allocation of risks for the sake of the community of stakeholders with a view to ensure consumer value for money.
- An industrial management framework for nuclear new build projects at the level of project development and ownership level is a key success factor in managing risk.
- An investment policy planning for lowcarbon technologies such as nuclear power is critical in driving investments and achieving the climate neutrality goals as embedded in the EU Green Deal.

STATE AID

FORATOM continued to monitor developments in relation to the revision of the guidelines on state aid for environmental protection and energy (CEEAG). The aim of this work by the European Commission 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 outreach to policymakers,

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.

With the work concluded at the end of the year, FORATOM can confirm that the guidelines do not apply to nuclear energy. However, they do cover the processing of nuclear fuel.

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 has to request a review, as well as the time which EU bodies have to respond to such a request.

In 2021, the European Parliament adopted a report (a resolution) the contents of which go well beyond

the Commission's proposal for amending the existing regulation as well as beyond the Aarhus Compliance Committee concerns. Nevertheless, in the summer the Commission, Parliament and Council reached an agreement on the proposal which was then presented during the meeting of the parties (MoP) of the Aarhus convention in October 2021. Whilst this agreement was deemed satisfactory by the MoP, more work will still need to be done on access to justice on state aid matters, particularly regarding nuclear power plant projects. However, the last meeting of the parties failed to find the EU legislation to be in breach of the Convention on this point.

SUPPLY CHAIN OPTIMISATION

Work continued throughout the year on a European Guideline for the Use of High-Quality Industrial Grade Items in Nuclear Facilities. This Guideline aims to be the foundation from which nuclear licensees and third parties would to be able to develop their own processes and procedures. It will support the safety, quality and cost competitiveness of the industry by clearly prescribing the proven ways in which commercial grade items and their suppliers should be verified.

Furthermore, the sustainability of the nuclear industry will be enabled by creating a harmonized procurement approach for existing and future licensed operating organizations.

The Guideline was finalised at the end of 2021, and work is now underway to communicate it to relevant stakeholders.

NUCLEAR INNOVATION, RESEARCH & DEVELOPMENT

In 2021, FORATOM responded to the European Commission consultation on the upcoming workplan of the next Euratom Research and Training programme highlighting the importance of synergies with other EU R&I programmes, reduced Euratom funding impact and focus areas for the next work programme. Following on from this, elements of Horizon Europe R&I programme (2021-2027) and its strategic agenda and work programmes were released. These included several cross-cutting areas in the fields of advanced manufacturing, industry 4.0 and digitalisation within Horizon Europe which could be of relevance to nuclear.

Furthermore, the Council of the European Union adopted the Regulation establishing the Euratom Research and Training Programme for 2021-2025.

The programme has a budget of €1 382 million and will contribute to fission research and fusion fields. Fission research will focus on safety, management of spent fuel and radioactive waste, decommissioning, radiation protection, education and training. The new Programme places increased emphasis on non-power applications of nuclear technology. In this regard, the medical field is the most prominent and Euratom is supporting the European's Beating Cancer Plan.

In May, FORATOM, together with the Sustainable Nuclear Energy Technology Platform (SNETP), supported a high-level roundtable hosted by Commissioner Mariya Gabriel. The goal of this roundtable was to highlight the importance of nuclear R&I and its impact on the European green and digital transition.

SMALL MODULAR REACTORS (SMR)

FORATOM continues to work with its members on the issue of SMR technologies and developments in Europe. Furthermore, FORATOM and its members provided feedback to the European Commission to assist them

in their preparation of an initiative dedicated to SMRs, the goal of which is to support the deployment of SMR technologies in Europe.

NON-POWER APPLICATIONS OF NUCLEAR

Throughout the year, FORATOM worked together with Nuclear Medicine Europe on a position paper dedicated to the medical uses of nuclear technology. The goal of this initiative is to raise awareness at EU level about how nuclear technologies are used in the field of medical diagnosis and treatment. Entitled "Medical Uses of Nuclear Technology: Role, Challenges & Perspectives", it gives an overview of how nuclear technology is being used in medicine, what its contribution at EU level is as well as the current situation at EU and Member State level. In this respect, FORATOM and NMEU have put forward a series of recommendations at EU level, including:

- Promotion of new research reactor capacity along with innovation in the sector
- Reconsideration of reimbursement systems and levels for radiopharmaceutical products to ensure that irradiation sites are fully remunerated for the costs incurred

- Development of a robust supply chain which goes beyond irradiation and includes the supply of target material and processing capabilities
- Adaptation of clinical R&D of new radiopharmaceutical compounds as well as for application marketing authorisations or variations to authorized medical products.

EDUCATION & TRAINING

Having become a member of the European Human Resources Observatory for the Nuclear Sector (EHRO-N) Senior Advisory Group in 2020, FORATOM continued to liaise with its members to provide relevant information to feed discussions and ensure close alignment between the two. 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.

Furthermore, FORATOM continued to work with its members on three key issues, namely:

- Rendering the sector more attractive to young people
- Identifying potential future skills shortages
- Identification of potential reconversion opportunities.

The ultimate goal of this work is to ensure that there are enough young people with the right skills joining the industry in the future.



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 projectistoraisetheinterestofstudentsandprofessionals 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.

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 was initially due to run for three years from October 2017 with a total budget of €3.2 million (due to COVID, this project has been extended beyond its initial 3 years). Given the impact of the pandemic, the project was extended for an extra year. 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:

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

- 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.

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 2021 FORATOM continued to assist in the reviewing of ongoing nuclear projects and in the identification of new projects which could be potentially funded under RIMA.

EUROPEAN NUCLEAR INSTALLATIONS SAFETY STANDARDS (ENISS)



ENISS represents the nuclear utilities and operating companies from 15 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)

WENRA approved at its April 2021 meeting a report on the applicability of the Safety Objectives to SMRs. The report concludes that the WENRA Safety Objectives are applicable to SMR designs, including evolutionary LWR (Gen III+) and Gen IV technologies. ENISS together with EUR had the opportunity to exchange views with WENRA on current activities regarding safety requirements applied to SMRs and to explore possibilities for future interactions.

WENRA has been tasked by ENSREG to develop the technical specifications for the ENSREG topical peer review (TPR) on fire protection, as for the 1st TPR (2017).

Relevant stakeholders, including ENISS, have been invited to provide feedback during the preparation of the TPR specifications.

In 2021 ENISS and FORATOM have had opportunities to interact with the Reactor Harmonisation Working Group of WENRA on the content of the guideline under development on Quality Assurance for procuring High-Quality Industrial Grade items aimed at supporting safety functions in nuclear facilities. The discussions and the comments received have been key to improve the clarity of the proposed approach.

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).

INTERNATIONAL COMMISSION ON RADIOLOGICAL PROTECTION (ICRP)

The ICRP has started the process of preparing a review of the ICRP system of radiation protection. The intended aim is to approve by 2029 a new set of fundamental recommendations on radiological protection. Liaison organisations, including ENISS, will have the opportunity to express their views on several occasions.

ENISS participated in the meeting of Senior Representatives of Organisations in Formal Relations with ICRP which took place online on 2 June 2021. The meeting mainly discussed the roles of organisations in the review and revision of the System of Radiological Protection. ENISS submitted prior to the meeting a statement outlining the role ENISS could play in the review.

The ICRP released on 21 July 2021 "Keeping the ICRP Recommendations Fit for Purpose", a paper that details the topics being considered for the review and revision of the System of Radiological Protection. Professionals and organisations have been invited to review the paper and to share their thoughts, feedback and experience.

ENISS carried out a review of the ICRP paper and put forward comments which will be submitted to the ICRP.

ICRP held a Digital Workshop on 19-20 October 2021. The ICRP had invited the submission of papers in response to the "Keeping ICRP Recommendations Fit for Purpose" paper, or any other topic related to the review of the System of Radiological Protection. Several ENISS members participated in the workshop.

EUROPEAN NUCLEAR SAFETY REGULATORS GROUP (ENSREG)

ENISS was invited to make a presentation at the ENSREG plenary meeting which was held from 3rd to 4th March 2021. ENISS presented its strategic plan, some key messages from its position papers and some specific ongoing activities. ENISS also shared some preliminary views on the TPR.

ENSREG organised on the 22nd of June 2021 a stakeholder event on the TPR on fire protection of

nuclear installations. This event aimed to provide information about the background and the objectives of the EU-wide topical peer review exercise, and to give stakeholders the opportunity to exchange on key issues. ENISS participated in the panel discussions on the experience of the first TPR and the EU peer review process and on the topic of fire-safety at nuclear installations. Among other things, ENISS called for further licensee involvement in the peer review stages.

POSITION PAPERS

The ENISS Expert Group on Radiation Protection has focused its attention on the following topics: RP optimisation and simplification, and the LNT hypothesis.

The ENISS Waste and Decommissioning Safety Group has finalised a position paper on the Transition between Operation and Decommissioning which will be presented to ENISS stakeholders in 2022.

EU PROJECT IMPLEMENTATION OF NUCLEAR AND RADIOLOGICAL EMERGENCY PREPAREDNESS AND RESPONSE REQUIREMENTS IN EU MEMBER STATES AND NEIGHBOURING COUNTRIES

DG ENER has launched a study which aims to review and evaluate the practical implementation of national emergency preparedness and response management systems and emergency plans in all EU Member States in accordance with the requirements in the BSS Directive, and review of their coherence in a transboundary context.

ENISS has been invited to participate in the Steering Committee set up for guiding the contractor at various stages of the work. A first workshop was organised in November 2021 which focused on discussing the evolutions of EP&R arrangements during the last decade, with presentations of the various stakeholders that contributed in the last 10 years to improve the EP&R mechanisms in different countries in Europe (EU and neighbouring countries). In its presentation, ENISS called to link emergency plans proportionately to site risk evaluated using an agreed consistent approach.





This year's event will focus on what lies ahead as we move towards 2050. In addition to a high-level Opening Session, there will be three sessions dedicated to issues such as EU energy and climate policy as well as innovation in the nuclear sector. The event will kick-off with a dinner on the evening of 6 June, followed by a full day conference on 7 June.

This year's hosts are our members Finnish Energy and therefore the event will be held in Helsinki, Finland.

More info: https://events.foratom.org/nuclear-europe-2022/



17th edition of the FORATOM-IAEA joint event on Management Systems

This event is the seventeenth in a series that the International Atomic Energy Agency (IAEA) and the European Atomic Forum (FORATOM) have organized to raise awareness and increase understanding of management systems as integrating all the vital objectives of nuclear facilities and activities. As last year, this event has a focus on the management of the supply chain.

More info: https://events.foratom.org/mse2022/

COMMUNICATIONS & STAKEHOLDER ENGAGEMENT



Given the ongoing pandemic, online communication remained the tool of choice for 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.

With COP26 taking place in the UK this year, the CAG also coordinated actions to promote the nuclear sector. A dedicated webpage was set up on the FORATOM website. FORATOM also joined other nuclear supporters in Glasgow in order to provide fact-based information about nuclear.

FORATOM has also developed an interactive map of nuclear facilities in Europe. The extensive range of facilities covered include nuclear power plants (under construction, in operation and being decommissioned), research reactors, waste management sites and fuel manufacturing facilities (enrichment, assembly and reprocessing). The map provides information on each facility, as well as links to further information and includes sites in the EU and FORATOM's non-EU member states (Switzerland, UK and Ukraine).

Several online events and webinars were held throughout the year as follows:

- 11 February 2021: Financing Nuclear New Build!
- 22 February 2021: Achieving industrial decarbonisation through affordable low-carbon hydrogen (organised under the umbrella of the EU Industry Days)
- 14-15 June 2021: Nuclear at a crossroads: Where to next?
- 7-9 September 2021: Management Systems for a Sustainable Nuclear Supply Chain (in cooperation with the IAEA)

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

Press Release

MEPs call on European Commission to recognise nuclear as sustainable

generate wasversages on interactions of the Brussels-based trade association for the nuclear energy industry in Europe. The membership of FORATOM is made up of 15 retained an unclear association and should be association for the nuclear associations and through these associations, FORATOM represents nearly 3,000 European companies working in the industry and supporting around 1,100.00 (picks.

FORATOM Press Release FORATOM highlights importance of maintaining existing nuclear Brussels, 14 December 2021: Today, FORATOM has released a position paper in which it highlights the importance of the long-term operation (LTO) of the existing nuclear fleet. According to the paper, keeping these power plants online will help the EU to achieve its emission reduction targets at an affordable cost. or electricity: According to the position paper, the LTO of the existing fleet will Help achieve the interim, 2030 targets Reduce the EU's energy import dependency Support the integration of a higher share of renewables In order to help combat some of these challenges, FORATOM puts forward the following policy commendations: Ensure a coherent, consistent and stable EU policy framework Agree an ambilious net-zero CO2 emissions target for the EU in 2050, in line with the Europear Commission's long-term vision for a climate neutral economy

FORATOM Press Release 16 December 2021 FORATOM supports inclusion of low-carbon hydrogen in Gas About us: The European Atomic Forum (FORATOM) is the Brussels-based trade association for the nuclear energy industry in Europe. The membership of FORATOM is made up of 15 national nuclear associations and brough these associations. FORATOM prepresents nearly 3,000 European companies working in the industry and supporting around 1,100,000 jobs.









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 Committee on Industry, Research and Energy (ITRE)

and the Committee on the Environment, Public Health and Food Safety (ENVI) and covered, in particular, the Sustainable Finance Taxonomy, the Hydrogen Strategy and the Fit for 55 package.

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 the OECD's 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 provides continued support to SNETP, including assistance with dissemination activities, and input to the SNETP Strategic Research & Innovation Agenda (SRIA). Furthermore FORATOM, SNETP and DGRTD jointly delivered updated content for the Strategic Energy Technologies (SET) plan action on Nuclear.



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