This past year has brought a lot of success for nuclear energy, despite the challenging market conditions that many of us are experiencing.

In November, construction started on Bangladesh’s first nuclear power plant at Rooppur. Bangladesh is following the United Arab Emirates and Belarus as the most recent nuclear newcomer country. Soon to follow will be Turkey, where general construction work started at the Akkuyu site in December in preparation for that country’s first nuclear power plant. Also in December, Egypt and Russia signed an agreement to build the first nuclear power plant in North Africa.

Nuclear continues to make progress in existing markets. More than 15 GW of new nuclear capacity is expected to start delivering electricity this year, three times the average level seen over the previous 25 years. We look forward to the coming year, with new reactors coming online and nuclear newcomer countries making progress in their programmes.

Even where developments are more challenging there has been positive news. In October, the recommendation of the Citizens’ Jury to complete construction of Shin Kori units 5 and 6 in South Korea was a welcome counter to the President’s decision to reduce his country’s reliance on nuclear energy.

World Nuclear Association continues to make progress and has seen its membership grow during the course of 2017. There have been major developments with Harmony, the global nuclear industry’s goal for nuclear to supply 25% of global electricity in 2050. The Harmony programme was officially recognized by the International Atomic Energy Agency as the nuclear industry’s target and presented to the ministerial conference in Abu Dhabi in October.

It was a big year for our Working Groups, with Cooperation in Reactor Design Evaluation and Licensing (CORDEL) and the OECD’s Multinational Design Evaluation Programme (MDEP) jointly organising the 4th Conference on New Reactor Design Activities in September, making progress towards greater harmonization of reactor licensing requirements.

We brought together our information and communication activities into one department to increase efficiency and strengthen our products, including World Nuclear News, the Information Library, strategic communication and media relations.

World Nuclear University extended its reach by hosting the School on Radiation Technologies in Brazil, the first time it has ever hosted a leadership course in South America.

In terms of getting nuclear on the international agenda, we made outreach efforts to UN Environment, which does not include nuclear in the low-carbon future, and to the World Bank which has an outdated policy excluding nuclear.

The Association is gearing up for exciting times. Our World Nuclear Spotlight conference took place in Indonesia in February 2018, bringing attention to a potential nuclear growth area. We are looking forward to being the industry counterpart in a nuclear Clean Energy Ministerial work stream beginning in May, which complements the Harmony programme. More Working Group reports are due to be published, with the first covering the lessons learned from recent nuclear construction projects. This year World Nuclear University will launch a new programme for executives, the WNU Executive Enhancement course, and organize its 14th Summer Institute, which will be in South Korea. And we will continue to make the case for nuclear internationally, bringing attention to the Harmony goal of 25% nuclear by 2050 and the benefits that this will bring.
January 2017

**Economics Report**
The Association publishes Nuclear Power Economics and Project Structuring.

**WNU Annual Review and Planning Meeting**
The World Nuclear University (WNU) Advisory Panel meets in London, UK, for its annual review.

**Working Groups**
120 participants from over 60 organizations attend the January Working Group meetings in London, UK.

March

**Sustainable Energy Technology Asia**
Agneta Rising joins a high-level panel session at the SETA conference in Thailand, where she presents the industry’s Harmony programme.

April

**World Nuclear Fuel Cycle 2017**
World Nuclear Association and Nuclear Energy Institute jointly organize WNFC in Toronto, Canada, which attracts 300 nuclear professionals from all over the world. Ahead of the conference, 120 participants attend Working Group meetings.

Africa
Agneta Rising speaks to young professionals working on developing national nuclear energy programmes in their home countries at the first African Youth Nuclear Summit. At Nuclear Africa 2017, Agneta emphasizes the need for nuclear energy in this region.

**50th Japan Atomic Industrial Forum**
Agneta Rising introduces the industry’s Harmony goal and underlines the need for continued Japanese nuclear power generation in order to decarbonize the energy sector.

June

**Harmony Booklet**
To enable wide promotion of the industry’s Harmony goal, a booklet is published detailing the need for Harmony, its objectives and actions for success.

**Performance Report**
The Association publishes the World Nuclear Performance Report 2017, providing key metrics on nuclear power plant performance and a review of recent developments in the global industry.

**Nuclear Footprints**
The final animation in the Association’s advocacy campaign, Nuclear Footprints, is released. Its mission is to promote the benefits of nuclear energy to the wider society.

**AtomExpo**
Agneta Rising introduces the Harmony programme at a high-level panel and attends the official start-up of the Women in Nuclear Russian Chapter.

July

**WNU Short Courses**
Short courses take place in China with 120 participants and in Korea with 63 participants.

**WNU Summer Institute**
The WNU holds its 13th Summer Institute in Uppsala, Sweden, with 76 fellows from 30 countries.

September

**Talking Points**
The Association publishes a collection of high-level positions on nuclear energy backed up by supporting facts.

**Symposium 2017**
The World Nuclear Association Symposium in London attracts 600 delegates from 35 countries.

**Working Groups**
300 participants from 75 member organizations attend Working Group meetings in London alongside Symposium 2017.

IAEA Cooperation Agreement
At the IAEA General Conference, Agneta Rising and IAEA Deputy Director General Mikhail Chudakov sign an organizational agreement on ‘Cooperation in the Area of Nuclear Energy and Nuclear Power Life Cycle and Fuel Cycle’.

October

WNU Short Course
The WNU short course ‘The World Nuclear Industry Today’ takes place in Indonesia for the first time, attracting 100 participants.

Singapore International Energy Week
Chairman Helmut Engelbrecht speaks at Singapore International Energy Week where the Association launches an Asia-focused version of its World Nuclear Performance Report 2017.

IAEA International Ministerial Conference
Agneta Rising presents Harmony to 700 participants from 67 IAEA Member States and five international organizations at the IAEA’s International Ministerial Conference on Nuclear Power in the 21st Century in Abu Dhabi, UAE.

WNU School on Radiation Technologies
The fourth WNU Radiation Technologies School takes place in São Paulo, Brazil, with 33 participants from 13 countries.

Brexit and Euratom
The Association puts forward a submission to the European Union Energy and Environment Sub-Committee inquiry about the implications of Brexit for the Euratom Treaty.

Changes to the Secretariat
The Association organizes all communication activities into one department and enhances the Harmony programme team to strengthen the work of the Secretariat.

November

WNU Short Course
‘The World Nuclear Industry Today’ short course is held in Buenos Aires, Argentina, attracting 80 participants.

Message to the UN Environment
The Association calls on the UN Environment to include nuclear energy in future dialogue on clean energy, innovation and sustainable development.

December

The Association hosts IAEA Technical Meeting
The Association hosts an IAEA Technical Meeting on behalf of the UK government and in collaboration with the World Association of Nuclear Operators (WANO).

January 2018

Working Groups
The Working Groups draw 148 participants from 70 organizations.

The Association addresses Bulgarian Parliament
Agneta Rising addresses the Energy Commission of the Bulgarian Parliament, saying that the time is right to make a strong commitment to a new nuclear build programme.

February

World Nuclear Spotlight
The World Nuclear Spotlight organized in cooperation with BATAN takes place in Indonesia with 86 global industry leaders and Indonesian officials.
World Nuclear Association represents the global nuclear energy industry.

Our mission
To promote a wider understanding of nuclear energy among key international influencers by producing authoritative information, developing common industry positions, and contributing to the energy debate.

Who we are
We are an international trade body made up of 178 member companies from 38 countries, covering all aspects of the global nuclear industry, including:

- Major reactor vendors.
- Nuclear utility companies (responsible for 70% of the world’s nuclear energy production).
- Uranium mining, conversion, enrichment and fuel fabrication companies.
- Nuclear engineering, construction and waste management companies, as well as R&D organizations.
- Companies providing services to the nuclear industry in areas such as transport, law, insurance and finance.

A global network of member companies
What we do

World Nuclear Association is the only industry organization with a global mandate to promote nuclear energy and represent the companies involved in the worldwide industry. We are in a unique position to share and advance best practices, work alongside other organizations across the globe, and provide unrivalled business opportunities for our members.

We work with industry. We provide an invaluable forum and commercial meeting place for our members, who are leaders and specialists in all aspects of the nuclear industry. Our members shape positions on economic, safety, environmental and technical issues through our Working Groups. Furthermore, we represent the industry and our members in key world forums that can influence the nuclear industry’s regulatory and policy environment.

We inform and communicate on nuclear energy. We pride ourselves on providing trustworthy, thoroughly-researched information on nuclear power via our website, which serves as the world’s most comprehensive nuclear information source, and through reports and other publications. The information we provide is influential and widely used within the industry and in news services and government. Our World Nuclear News service is the leading online news provider on developments related to global nuclear power. With a goal to increase global support for nuclear energy among key stakeholders and decision-makers, we identify important energy debates and strategically represent nuclear energy’s interests. By coordinating with our partners on key messages, we deliver targeted information to decision-makers and influencers, including media and international organizations.

We train the leaders of tomorrow. Through the World Nuclear University programmes, we work with the International Atomic Energy Agency (IAEA), the OECD Nuclear Energy Agency, and the World Association of Nuclear Operators to enhance nuclear education and build nuclear leadership to contribute to the future of the industry.

We drive global action towards the Harmony goal. Harmony is the nuclear industry’s vision for the future of electricity, with a goal of 25% of global electricity in 2050 to be provided by nuclear energy. We drive global action towards reaching this goal through promotion and engagement with key stakeholders including policymakers.
Harmony Programme

The Harmony goal is the global nuclear industry’s vision for the future of electricity. To meet the growing demand for reliable, affordable and clean electricity, we will need all low-carbon energy sources to work together as part of a diverse mix. Nuclear energy is key to the future electricity system as one of the largest contributors to a stable and clean supply that delivers 24 hours a day, 7 days a week. Achieving the Harmony goal means nuclear energy capacity must triple globally by 2050. The Harmony programme provides a framework for action, helping industry reach out to key stakeholders so that barriers to growth can be removed.

Harmony goal

Why we need Harmony

Access to electricity and the need for clean air are vital. Electricity consumption will continue to rise whilst more people require access to electricity for a better quality of life. At the same time it is important that there is a reduction in air pollution and greenhouse gas emissions.

The Harmony goal is based on the International Energy Agency’s 2°C Scenario, which sets out a pathway that avoids the most damaging consequences of climate change. It requires greatly reduced levels of fossil fuel and an increased share of low-carbon sources, of which nuclear energy is an important part, working together to ensure a reliable, affordable and clean future energy supply that delivers 24/7 irrespective of seasons and weather.

Harmony objectives – key to success

The global nuclear industry needs to focus on removing barriers to growth. Three objectives are key to achieving the Harmony goal:

1. Establish a level playing field in energy markets which drives investment in future clean energy, where nuclear energy is treated on an equal basis with other low-carbon technologies and recognized for its value in a reliable, robust low-carbon energy mix.

2. Ensure harmonized regulatory processes in order to provide a more internationally consistent, efficient and predictable nuclear licensing regime, to facilitate growth of nuclear capacity and timely licensing of innovative designs.

3. Create an effective safety paradigm focusing on genuine public wellbeing, where the health, environmental and safety benefits of nuclear are valued when compared with other energy sources.
Leadership and advocacy around the world
The Association has actively participated in international events to advocate for the inclusion and recognition of nuclear energy as an effective clean source of energy. Harmony has been presented and discussed at the highest levels of industry in Japanese, Russian, Australian, European Commission and United Nations gatherings and input from stakeholders is continuously incorporated into the programme.

Industry engagement
For each Harmony objective the Association is developing robust global positions and recommendations involving a wide range of stakeholders. The Association has convened a number of meetings and workshops to engage industry stakeholders on the issues in order to facilitate the development of policy recommendations. Member companies are starting to incorporate Harmony messages and promote its goal.

International recognition
An important milestone was the recognition of Harmony as the global nuclear industry’s vision for the future by the International Atomic Energy Agency (IAEA). It was noted alongside United Nations and OECD energy and sustainable development programmes in the IAEA Director General’s report to the board of governors.

Agneta Rising presented the programme to energy ministers from 67 IAEA member states at the IAEA Ministerial Conference, which occurs only once every four years. A feature article on Harmony was also published in the IAEA Bulletin.

Clean Energy Ministerial initiative on nuclear energy
An intergovernmental workstream on nuclear energy is being developed by Canada, the USA and Japan to facilitate dialogue among Clean Energy Ministerial (CEM) member countries on the role the technology can play in bolstering economic growth, energy security, and environmental stewardship. The Harmony objectives are closely aligned with the initiative and the Association is ready to provide industry support.

Achievements

“The Harmony ambition is excellent… I think the Harmony vision is correct, the vision is right, and it is in our hands to achieve it.”
Robert Davies, Chief Operating Officer, CGN UK

“We need leaders at every level. Leaders who continue to believe in the future of our industry and help promote the vision we all share under Harmony.”
Tim Gitzel, Chief Executive Officer, Cameco
Informing and Influencing the Energy Debate

The Association is uniquely placed, with its network of global members, to provide the latest and most important information about the nuclear industry and to ensure nuclear has its place within the energy debate. Our communication channels, including social media, World Nuclear News (WNN), the World Nuclear Association website and Information Library, are vital tools for the industry, government, media and academia.

Acting on behalf of the global nuclear industry

The Association represents the industry in key forums where the future of energy is being discussed. Speaking at these high-level meetings provides an opportunity to place nuclear energy on the agenda and to demonstrate its important contribution to the future energy system.

- The Director General was invited to present Harmony at the International Ministerial Conference on Nuclear Power in the 21st Century in Abu Dhabi, United Arab Emirates. She presented to an audience of 700 participants from 67 IAEA Member States and had the opportunity to meet and build relations with influential high-level ministry representatives from around the world. Several ministries requested strategic support and information from the Association.

- At the African Youth Nuclear Summit in Kenya Agneta Rising spoke to young and enthusiastic professionals from across the continent who are working on developing national nuclear energy programmes in their home countries.

- Agneta joined a high-level panel session at the Sustainable Energy & Technology Asia 2017 conference in Thailand. We were able to extend the reach of Harmony messages to important government officials from the region and leading professionals from the international energy industries.

- Agneta introduced the Harmony goal to the 50th Japan Atomic Industrial Forum in Tokyo, Japan, and underlined the need for continued Japanese nuclear power generation in order to decarbonize the energy sector.

- Association Chairman Helmut Engelbrecht presented at Singapore International Energy Week on the importance of developing a clean energy system that optimizes the contributions of nuclear and renewables.

Working with partners

- In 2017, we formalized our long-standing cooperation with the International Atomic Energy Agency (IAEA) in nuclear energy, nuclear power plant life cycle and the fuel cycle. The signed agreement sets out practical arrangements on cooperation, and areas for further collaboration.

- On behalf of the UK government, and in collaboration with the World Association of Nuclear Operators (WANO), we hosted an IAEA Technical Meeting on Roles, Responsibilities and Interfaces between Design Authority, Responsible Designers and Technical Support Organizations. This successful, first-of-a-kind collaboration is a great example of three organizations working together with experts from member countries on a common topic of interest.

- Agneta Rising presented the Harmony programme to members of Foratom in December 2017. We will continue to cooperate closely with Foratom, and other nuclear organizations, on the impactful delivery of our nuclear energy messages.
Reaching out to decision-makers

• We called on the World Bank Group to recognize that nuclear has a key role to play in society and the electrical system, following its announcement at the One Planet Summit in Paris that it would stop investing in upstream oil and gas and transition away from coal.

• Following the UN Environment’s rejection of our offer to sponsor the Sustainable Innovation Forum at the annual climate change talks (COP23), we asked them to join other leading international bodies in recognizing that nuclear energy is an important part of the solution to climate change. We would like to see nuclear energy represented in future UN Environment dialogues on clean energy, innovation and sustainable development.

• We supported the International Energy Agency’s (IEA) calls for clear and consistent policy support for nuclear energy. In its Energy Technology Perspectives 2017 report, the IEA examined how the energy sector can be transformed to supply the world’s population with clean energy while avoiding dangerous levels of climate change.

• We made a submission to the EU Energy and Environment Sub-Committee Inquiry about the implications of Brexit to the UK and European nuclear sectors and the potential impact on global partners.

• We support existing nuclear countries in their decision process about the future of nuclear in their country. Agneta Rising was invited to speak to the Energy Commission of the Bulgarian Parliament in January 2018, calling on it to make a strong commitment to a new nuclear build programme.

• We also work with emerging nuclear countries, demonstrating the international industry’s support to their nuclear power programmes. The World Nuclear Spotlight Indonesia on 7-8 February 2018 brought together high-level global industry representatives with government officials from that country, to exchange information on the technology and economics of nuclear power plants and the benefits of nuclear energy.
World Nuclear News

We take pride in sharing well-researched, relevant, timely and trustworthy information about nuclear energy on a daily basis via World Nuclear News (WNN). Our experienced in-house journalists draw on our global network of contacts in industry, academia, research institutes, governmental and intergovernmental agencies that includes key personnel in enterprises that account for practically all of the world’s uranium mining, nuclear fuel manufacture, equipment production and nuclear power generation.

We also share Viewpoints, written by experts in the nuclear community, to provide external opinion and perspective on topics of particular interest. In 2017, Viewpoints received over 86,000 views.

The changing digital landscape has helped to improve understanding of the industry by increasing access to information. We want to continue to support these changes and further strengthen our role in providing free and accurate public information on nuclear energy.

During 2018 we will introduce a responsive design for the WNN website to meet the needs of a growing mobile readership. The design will also make improvements based on feedback from a survey of WNN users.

We reach a wide audience via WNN digital channels:

744k Visitors to WNN website
20k WNN email subscribers
30.2k Twitter followers
144k Facebook followers

“WNN does a great job of spreading important and updated news about nuclear energy”
WNN reader

Nuclear energy in the media

Throughout the year, we issued press statements on important events for nuclear energy, such as the introduction of nuclear power in Turkey, the impact of the blackout in Taiwan, and the completion of initial construction at Barakah unit 1 in the UAE.

Agneta Rising gave several interviews to press at the Nuclear Africa conference on the need for nuclear energy in the region, including in South Africa’s Engineering News. She also gave an interview to Bloomberg TV during her visit to the Energy Commission of the Bulgarian Parliament. Association staff featured in audio and video interviews, including CNBC, and we produced articles for publications such as the Energy Industries Council’s Energy Focus on global nuclear prospects, Nuclear Engineering International on the Nuclear Fuel Report, World Economic Forum Agenda Blog on nuclear innovation, Energy Post on nuclear power in China and the IAEA Bulletin on Harmony.
Information Library

The Library section of the website features 185+ detailed papers covering every aspect of the nuclear industry including: current projects, future prospects, technology, policy issues and country-by-country briefings. The Library, viewed 5.4 million times in 2017, is updated daily by a dedicated team.

Reactor Database

With main data, key dates, maps and performance information on every power reactor in the world, the Reactor Database combines the Association’s in-house research with official IAEA data to provide a searchable resource on the global nuclear fleet and its performance. In 2018, the Database will be enhanced to integrate more fully with the Information Library.

World Nuclear Performance Report 2017

We published the 2nd edition of the World Nuclear Performance Report. The report provides the nuclear industry, journalists and other interested parties with an authoritative review of nuclear generation worldwide, with detailed performance data and case studies from member companies highlighting new build successes.

A second version of the report was launched at Singapore International Energy Week to provide information on nuclear energy developments specifically in Asia as well as an overview of nuclear reactor performance worldwide. This generated additional media coverage for the report, including a video interview by CNBC.

Talking Points

Because industry members need to have high-level messages and facts when talking to the media and in their public communication activities, we developed Talking Points, a collection of 22 topics and 71 supporting facts. It was used, for example, by Nuclear for Climate as the basis of its daily press releases at COP23.

Nuclear Footprints campaign

The Nuclear Footprints campaign, launched in March 2016, introduces the benefits of nuclear energy to a general audience using animations. Over 2016 and 2017 we released a total of five animated graphics. The final animation, released in June 2017, illustrates what future generations are getting excited about and how nuclear technology is evolving to meet the needs of our changing world. Visit the campaign website: www.nuclearfootprints.org.

Publications

The Association publishes reports on industry topics and Working Group-related activities. The latest publications include:

- Safety Classification for I&C Systems in Nuclear Power Plants: Comparison of Definitions of Key Concepts
- Implementation of a Design Authority Within the Nuclear Operating Organization
- Non-Linear Analysis Design Rules
- The Nuclear Fuel Report
- World Nuclear Performance Report 2017 and Asia Edition
Business and Networking Opportunities

World Nuclear Association runs events around the world, as well as co-hosts, supports and partners with other significant conferences.

Our events provide a global forum and commercial meeting place for industry members and the opportunity to connect with other professionals.

World Nuclear Association Symposium

Symposium is the major annual event for the nuclear community. Taking place every September in London, it offers opportunities for delegates to network with hundreds of top nuclear energy professionals and executives from all over the world.

In 2017, Symposium began with an exclusive Welcome Reception at the stunning National Gallery, sponsored by Rosatom. Agneta Rising opened the conference agenda, presenting an update on Harmony. The programme featured expert presentations on nuclear power and the fuel cycle from leaders in the nuclear industry. The conference closed with a gala dinner sponsored by CGN.

Delegate positions in 2017

- 48% CEOs, VPs and directors
- 32% Senior managers and advisors
- 7% Journalists
- 7% Executives and officers
- 6% Engineers and technical experts

Countries represented: 35
Delegates: 600
International speakers: 39
Exhibitors: 24
World Nuclear Fuel Cycle

Every April we hold the World Nuclear Fuel Cycle (WNFC) conference jointly with the Nuclear Energy Institute. It provides an international forum to discuss issues affecting the nuclear fuel cycle, with leading industry experts attending to provide insights to help the industry navigate the complex fuel marketplace. WNFC also offers a technical tour. The conference takes place in a different location each year, enabling people from all continents to attend. WNFC 2017 was held in Toronto, Canada, and participants had the opportunity to visit Cameco’s Port Hope conversion and fuel manufacturing facilities and Ontario Power Generation’s Darlington nuclear power plant.

WNFC 2017 participation by region

- 55% Americas
- 19% Europe
- 19% Asia-Pacific
- 4% Russia and Central Asia
- 3% Africa and Middle East

World Nuclear Spotlight Indonesia

On 7-8 February 2018, 86 participants gathered in Jakarta for World Nuclear Spotlight Indonesia. We worked closely with our member BATAN to organize a conference and a high-level meeting, bringing together Indonesian officials who presented the scope of their nuclear energy programme and global nuclear industry leaders who demonstrated their support for the country’s nuclear programme. The event was successful, generating a lot of media coverage and a commitment to nuclear from the Indonesian Parliament, Commission VII for Energy.

Working Group meetings

The Association organizes Working Group meetings throughout the year, typically held in January, in April alongside the WNFC conference, and in September alongside the Symposium. The January and April 2017 meetings each attracted 120 delegates, while the September 2017 meetings in London were attended by 300 people from 75 member organizations. The meetings are combined with social events to maximize opportunities for business networking.

“This is the biggest event we can have in the nuclear community. We have everybody in one place and I have spent my time meeting with people and increasing my network.”

Guillaume Dureau, Senior Executive Vice President, Orano
Collaborating as an Industry

Working Groups are exclusive forums that allow members to share best practice, conduct analysis, and develop consolidated positions on economic, safety and environmental issues for members’ business development. Several Groups act as the interface for industry at policy-setting organizations, such as the International Atomic Energy Agency (IAEA), the International Commission for Radiological Protection (ICRP) and the Nuclear Energy Agency (NEA) of the OECD. Advisory Groups support the Secretariat in identifying opportunities and challenges for the nuclear industry. Each Group is chaired by an expert from a member company, and has a mentor assigned to it from the Board. Administrative and technical support is provided by the Secretariat.

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Fuel Cycle Working Groups

- **Fuel Report**
  - Co-Chairs: Thomas Cannon (Arizona Public Service Company) and Dauren Alybayev (Kazatomprom)
  - Staff Director: Olga Skorlyakova

  Report Working Group cooperate on the report through six sub-groups. Each focuses on different areas of the fuel cycle and has ownership of different chapters. The latest edition published in 2017 looks at scenarios to 2035.

  **Demand**
  - Co-Chairs: Carole Marot (EDF)
  - Brandon Munro (Bannerman Resources)

  Agrees on three scenarios (Lower, Reference, Upper) for future nuclear capacity out to a 20-year horizon and the main assumptions (e.g. load factors) affecting future requirements.

  **Conversion**
  - Chair: Nikko Collida (ConverDyn)

  Analyses future conversion supply capacities versus demand in this concentrated segment of the fuel cycle.

  **Primary Uranium Supply**
  - Chair: Frank Hahne (Fluor-BWXT Portsmouth)

  Discusses classification of existing mines, projects under development, and anticipated uranium supply.

  **Enrichment**
  - Chair: Francisco Tarin (Enusa)

  Focuses on key questions affecting this area of the fuel cycle including: supply-demand imbalance, underfeeding, trade issues.

  **Secondary Supply**
  - Chair: Rolf Kwasny (Consultant)

  Examines key trends and the contributions of various sources of secondary supplies. Information on secondary supplies is woven throughout the report.

  **Fabrication**
  - Chair: Laurence Mercier (Framatome)

  Discusses this dynamic part of the fuel market, analysing future prospects and the impacts of new developments on the whole fuel cycle.
The mission of this Group is to promote a reliable and proliferation-resistant international nuclear fuel cycle and to support and guide the Association’s engagement with the IAEA and other agencies in the fields of security and non-proliferation. The Group supports the role of the IAEA in marshalling international cooperation in nuclear security and in publishing consensus recommendations which reflect current best practice. The Group is represented on the Nuclear Security Guidance Committee, which is responsible for developing IAEA recommendations on security. A regular topic at meetings is assessment and management of the cyber threat to the nuclear industry. The Staff Director participated in an international conference held in Vienna on the physical protection of nuclear material and nuclear facilities in November 2017. The conference shared experience and lessons for nuclear security since the amended Convention on the Physical Protection of Nuclear Material entered into force in May 2016. In 2018 the Group plans to renew the Association’s relationship with the United Nations 1540 Committee and the ‘Wiesbaden process’ to enhance ways for the UN to work with industry on promoting the objectives of Security Council Resolution 1540 of 2004 on preventing strategic technologies falling into the wrong hands. It will also liaise with the Supply Chain Working Group on export control reform.

Sustainable Used Fuel Management

Chair: Mikhail Baryshnikov (TENEX)  Deputy Chair: Cecile Evans (Orano)

The mission of this Group is to shape industry positions with a view to engaging in the international debate on sustainable management strategies for the back end of the fuel cycle. The Group also acts as a forum for experts to share good practices and major developments in used fuel management. In 2017, the Group conducted a survey looking at used fuel management strategy, as well as technical, financial and communication issues. In June 2017, it convened a half-day session during an IAEA technical meeting examining the drivers for different used fuel management approaches, where the findings of its survey were presented. In 2018, the Group will continue to represent industry at international forums including on the Steering Committee for the IAEA’s Status and Trends in Spent Fuel and Radioactive Waste Management report.

Transport

Chair: Russell Neely (Edlow International)  Deputy Chair: Ian Mance (Urenco)

This Group acts as a forum for communicating industry developments, exchanging leading practice, and for identifying and resolving issues relating to the shipment of nuclear material. The primary focus of the Group is to address commercial topics relating to the transport of front-end nuclear materials. The Group is represented on the Transport Facilitation Working Group (TFWG), a multi-stakeholder initiative to preserve and open up new routes for the transport of radioactive material, and on the IAEA’s Transport Safety Standards Committee (TRANSSC). It also enjoys close ties with the World Nuclear Transport Institute.

In 2017, the Group developed communication tools that explain why nuclear and radioactive material is transported and how risks have been successfully managed for 60 years. It also conducted research on the insurance market for nuclear transport. In 2018, the Group will conduct outreach to transport groups, such as carrier associations, to promote understanding of movement of radioactive materials. It will also continue to undertake dialogue with the insurance community with a view to improving the options for transport cover.

Fuel Cycle Members Forum

Chair: Tim McGraw (Cameco)

The Fuel Cycle Members Forum focuses on developments in nuclear fuel and trade, typically attracting 80-90 people to its meetings. Sessions consist of reports from Working Groups in the fuel cycle area as well as formal presentations and panel discussions.
CORDEL’s mission is to promote a worldwide nuclear regulatory environment where internationally accepted standardized reactor designs can be widely deployed without major design changes at the national level. In practice, this would mean that generic design certification and safety evaluations approved by a recognized competent authority would be acceptable in other countries.

CORDEL acts as the industry’s voice in the area of reactor design standardization with the Multinational Design Evaluation Programme (MDEP), International Atomic Energy Agency (IAEA), European Nuclear Installations Safety Standards Initiative (ENISS), European Utility Requirements for LWR Power Plants (EUR), International Electrotechnical Commission (IEC), and the Standards Development Organizations (SDO) Convergence Board.

In 2018, a new strategic plan focusing on both new-build and operating aspects of nuclear power plants will be issued to cover the period 2018-2022. A revision of the memorandum of understanding made with ENISS is also foreseen.

Following the first regional workshop on Technical and Regulatory Issues Facing Nuclear Power Plants organized by CORDEL in cooperation with the Long Term Operation Task Force in June 2016 in Chicago, USA and the second one in October 2016 in Moscow, Russia, the third regional workshop will be held in Shanghai, China in May 2018.

The key achievements of the various CORDEL Task Forces in 2017, as well as planned tasks, are described below.

**Small Modular Reactors**

Chair: Tom Bergman (NuScale Power)

The Task Force represents the industry in relevant international forums such as the IAEA’s Small Modular Reactor Regulators’ Forum and the International Project on Innovative Nuclear Reactors and Fuel Cycles (INPRO), where it advocates applying the CORDEL model to global SMR deployment. The Task Force is working on developing a roadmap for deploying SMR technology in an emerging country and on in-factory certification of modules. It will evaluate whether the US Nuclear Regulatory Commission approach to licensing, which allows approval of a design separately from a site, is a useful model for the concept of factory certification.

**Digital Instrumentation & Control**

Chair: Johannes Pickelmann (Framatome)

In September 2017, the Task Force published Safety Classification for I&C Systems in Nuclear Power Plants: Comparison of Definitions of Key Concepts, which investigates the discrepancies between the definitions of concepts used in different regulatory frameworks. It will continue to work on defence-in-depth and diversity aspects as well as on I&C modernization.

**Licensing and Permitting**

Chair: Vanessa Jakovich (Freshfields)

This Task Force aims to establish an internationally recognized concept of a ‘reference plant’, which would take advantage of the acceptance of a design by a competent safety authority. It maintains a dialogue with regulators through the Multinational Design Evaluation Programme, the OECD Nuclear Energy Agency and the IAEA’s Small Modular Reactor Regulators’ Forum.

**Design Change Management**

Chair: Vacant

In 2017 the Task Force published its report on Implementation of the Design Authority within a Nuclear Operating Organization. It also hosted, on behalf of the UK government, and in collaboration with the World Association of Nuclear Operators (WANO), the IAEA Technical Meeting on Roles, Responsibilities and Interfaces between Design Authority, Responsible Designers and Technical Support Organizations.

**Mechanical Codes and Standards**

Chair: Nawal Prinja (Wood)

This Task Force has launched its benchmark study on non-linear analysis methods, with results expected in early 2018. It has also initiated a project on the comparison of code requirements for fatigue analysis.

**IAEA Nuclear Safety Standards**

Chair: Frank Lignini (Framatome)

This Task Force continues to monitor the work being performed by the IAEA Nuclear Safety Standards Committee (NUSSC), providing industry input where required, and maintains its close cooperation with ENISS and EUR on new or revised safety standards.
This Group identifies means by which nuclear power plant operators worldwide can improve the performance of their plants. The Group focuses on areas relevant to plant economics such as availability, reliability, flexibility and capacity. Since 2015, the Group has operated the Long-term Operation Task Force, which was set up in September 2015, presented its conclusions to an IAEA technical meeting in Vienna in August 2017 and at a conference in October organized by Constructing Excellence. A Task Force report is set to be published in early 2018.

The International Framework for Nuclear Energy Cooperation (IFNEC), a governmental grouping to share information on nuclear energy issues, established a working group to examine supply chain challenges involved in localizing manufacturing in emerging nuclear countries and invited the World Nuclear Association to its meetings in June and November.

In 2018 the Group also plans to revisit the 2015 report on Good Practice in the Compliance and Licensing of Nuclear Exports and to remain engaged with the Nuclear Suppliers Group. It will monitor and provide reactor vendor input to a European Union project to widen the procurement gateway for furnishing lower safety class components to a wider range of suppliers.

This Group supports members in monitoring and identifying market trends, promoting timely, consistent and efficient plant construction, and in communicating with stakeholders on industrial developments.

The Group reports regularly to the Multinational Design Evaluation Programme’s (MDEP’s) Vendor Inspection Coordination Working Group and in September 2017 presented its work to the Fourth MDEP Conference on New Reactor Design Activities in London. It continues to work with the Nuclear Quality Standard Association to help ensure that the issuing of a quality management standard for the nuclear supply chain by the International Organization for Standardization meets the needs and aspirations of licensees and technology vendors.

The New Build Lesson-learning Task Force, which was set up in September 2015, presented its conclusions to an IAEA technical meeting in Vienna in August 2017 and at a conference in October organized by Constructing Excellence. A Task Force report is set to be published in early 2018.

The Group monitors developments and shapes industry positions with a view to improving the system of waste management and decommissioning. It promotes the appropriate re-use and recycling of material – and safe disposal of waste – from nuclear sites.

In 2017, a sub-group of members worked on a methodological guide for managing waste from decommissioning, the scope of which covers the strategic, technical and economic aspects of waste management. The guide is expected to be published in 2018.

In 2018, the Group will continue to cooperate with other Working Groups on topics such as radiological protection of workers during decommissioning, and multinational repositories.
This Group’s focus is on developing a better understanding of the economics and the capital costs of nuclear plants, notably new plants. It also examines the competitiveness of nuclear energy in the overall generating mix.

Its 2017 report, *Nuclear Power Economics and Project Structuring*, demonstrated that new nuclear is still justified in many countries on economic criteria and aimed at identifying the key risks in a nuclear project.

With the objective of providing key inputs to the Harmony programme, the Group in 2018 will examine: system/grid costs associated with nuclear and other electricity generation; conditions for fair competition among low-emission electricity generation; future changes that will have an impact on electricity markets, such as costs of storage, load-following and demand-side management; socio-economic benefits of nuclear development; and financing of nuclear development.

**Radiological Protection**

*Chair: Marcel Lips (Kernkraftwerk Gösgen-Däniken)  
Vice-Chairs: Willie Harris (Exelon) and Chew Pham (BHP Billiton)*

*Staff Director: Binika Shah*

In 2017, the Group arranged a visit to the Fukushima Daiichi site to inform industry’s preparedness for emergencies, its position on transition from emergency to planned or existing exposure situations, and to better understand the work taking place to decommission the site. In addition, alongside the ICRP Symposium in Paris in October, it hosted a plenary session with various international organizations to discuss the status and development of the RP system.

In 2018, the Group will review its strategy. Among the topics for this year’s discussions are increased efficiency in RP integration of environmental protection in a system of protection, and RP in decommissioning.

**Law**

*Chair: Helen Cook (Shearman and Sterling)  
Deputy Chair: Chris White (Urenco)*

*Staff Director: Philippe Costes*

This Group was established with a mandate to raise awareness of the legal issues and developments affecting the global nuclear industry amongst the membership of the Association, as well as to provide a forum to the members’ legal representatives to discuss issues and development. The Group also liaises with other Working Groups and assists when necessary on ways to respond to specific legal challenges. It has developed mutually beneficial relationships with the legal offices of the International Atomic Energy Agency (IAEA) and OECD Nuclear Energy Agency (NEA) as well as with other relevant stakeholders.

In 2017, the Group examined the consequences of ‘Brexit’ for the nuclear industry, developments in global nuclear liability and insurance, issues in nuclear new build and, in conjunction with the World Nuclear Fuel Cycle in Toronto, focused on the Canadian nuclear legal framework.

In 2018, the Group plans to continue to be a forum for the exchange of information on contemporary legal topics, including considering the impact of nuclear cooperation agreements on the nuclear industry. In addition, the Group will continue to forge greater connections with other Working Groups and to cooperate on subjects of mutual interest.

**Economics**

*Chair: Milton Caplan (MZ Consulting)*

*Staff Director: Philippe Costes*

This Group’s focus is on developing a better understanding of the economics and the capital costs of nuclear plants, notably new plants. It also examines the competitiveness of nuclear energy in the overall generating mix.

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**Nuclear Innovation Roadmap – NI2050**

*Staff Director: King Lee*

This Group coordinates industry input into the OECD Nuclear Energy Agency’s (NEA) Nuclear Innovation 2050 (NI2050) initiative. NI2050 is building a cooperative framework aimed at accelerating R&D and market deployment of innovative fission technologies to contribute to a sustainable energy future. The Association is a member of the NI2050 Advisory Panel, which is involved in the road mapping of the main priority areas where R&D is necessary to push for innovation.
Advisory Panel

Chair: Tim Gitzel (Cameco)  Deputy Chair: Clark Beyer (Rio Tinto)
Staff Director: Virginie Ryan-Taix

The Advisory Panel has a consultative function. It seeks to identify challenges facing the global nuclear industry, opportunities to advance its position in policy arenas, and ways to improve the public acceptance of nuclear energy. It provides recommendations on how the Association should position itself in addressing these challenges.

In January 2017, along with several Board members, the Panel participated in a Harmony workshop and further discussed the issues papers, process, and stakeholder outreach activities during their April and September meetings. Other input from the Panel included reviewing key findings from a report by the New Build Lesson-learning Task Force and providing advice on an outreach initiative to emerging nuclear countries.

Communication Group

Chair: Jayne Hallett (Urenco)  Deputy Chair: Adrian Bull (National Nuclear Laboratory)
Staff Director: Virginie Ryan-Taix

The role of the Communication Group is to support the Association by identifying communication opportunities and challenges facing the industry and ways to address them. Its members also provide support to specific projects decided by the Group and help disseminate key messages to the wider industry and beyond.

In 2017, the Group worked on the final two animations of Nuclear Footprints, a campaign on the theme of nuclear technology and how it relates to the environment, health and the future. The Group initiated the idea of an advocacy campaign towards emerging nuclear countries, which led to the organization of the World Nuclear Spotlight Indonesia event in February 2018. Members also provided feedback on the Talking Points booklet, a collection of high-level positions on nuclear energy published in September 2017.

Other activities of the Communication Group included discussions on the Swiss referendum and the Korean situation, and reaching out to other associations such as the Nuclear Energy Institute and Foratom to share communication initiatives as well as the Harmony programme.
The World Nuclear Industry Today

Each year, the WNU offers week-long short courses designed for national educational and research centres, local nuclear industry, supply chain companies, and regulatory authorities. Taught by international experts, each course is adapted to the phase of nuclear development of the host country with the objective of offering practical knowledge, a global perspective of the industry today, and an exciting vision of the future.

In 2017, courses were held in: Rio de Janeiro, Brazil; São Paulo, Brazil; Astana, Kazakhstan; Yantai, China; Daejeon, South Korea; Yogyakarta, Indonesia; and Buenos Aires, Argentina.

School on Radiation Technologies

The World Nuclear University, in joint collaboration with the Nuclear and Energy Research Institute (IPEN), held the fourth WNU School on Radiation Technologies in São Paulo, Brazil on 16-27 October 2017 with 33 participants from 13 countries.

Presenters included leaders Van Zyl de Villiers (President, World Council of Isotopes), Mark Lesinski (President and CEO, Canadian Nuclear Laboratories), Richard Banati (Biomedical Scientist, Australian Nuclear Science and Technology Organisation) and Meera Venkatesh (Director of Division of Physical and Chemical Sciences in the Department of Nuclear Sciences Applications, IAEA).
Summer Institute

The World Nuclear University Summer Institute has completed 13 successful years of enhancing nuclear education and preparing future leaders and professionals. Organizations around the world rely on the WNU to provide leadership training for their career development programmes.

The 2017 Summer Institute took place in Uppsala, Sweden, from 27 June to 4 August and welcomed 76 Fellows from 30 countries. The programme develops a broad understanding of nuclear topics and essential skills for effective leadership. Topics include: global energy setting; nuclear industry and innovations; communication, project management and leadership; and safety, security and safeguards.

Key invited leaders included: Hans Blix, WNU Chancellor and IAEA Director General Emeritus; Alice Hayward, Deputy Director General, IAEA; Kirill Komarov, Deputy Director General, Rosatom; and William Magwood, Director General, OECD-Nuclear Energy Agency.

“It was a fantastic experience for mentors and students to live and work together to address the challenging issues facing the nuclear field, and offer creative suggestions for improvements.”

Janice Dunn Lee, Deputy Director General Emeritus, International Atomic Energy Agency and Summer Institute 2017 Mentor

Network for Nuclear Innovation

An initiative derived from the WNU Summer Institute is the Network for Nuclear Innovation. Fellows discuss important current nuclear industry challenges and produce an original piece of work.

The 2017 Network for Nuclear Innovation projects included: possible solutions for the technical and economic challenges of the integration of nuclear and renewables in a low-carbon grid; sustainability factors in the energy system; a feasibility study for a new nuclear power project; and global communications in the 21st century.

2018 events

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<th>Date</th>
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<td>14-15 March</td>
<td>Summer Institute Alumni Extended Leadership Development Workshop, Bariloche, Argentina</td>
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<td>19-23 March</td>
<td>The World Nuclear Industry Today, Rio de Janeiro, Brazil</td>
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<td>26 June to 3 August</td>
<td>Summer Institute, Busan and Gyeongju, South Korea</td>
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<td>3-6 July</td>
<td>The World Nuclear Industry Today, Shanghai, China</td>
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<td>9-11 July</td>
<td>The World Nuclear Industry Today, Daejeon, South Korea</td>
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<td>4-8 November</td>
<td>Nuclear English Course, Abu Dhabi, UAE</td>
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<td>11-13 November</td>
<td>The World Nuclear Industry Today, Abu Dhabi, UAE</td>
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Governance and Organization

The Director General is responsible for the running of the Association and is ultimately accountable to the Board of Management. The Board holds final approval on proposals made by the Director General, including strategic and budgetary decisions.

In April 2017, Kirill Komarov from Rosatom became Vice-Chairman. Helmut Engelbrecht continues as Chairman until April 2018.

The Board of Management

The Board comprises senior executives from member companies who meet twice a year and serve for two years. The Chairman of the Board is also appointed for a two-year term, after serving as Vice-Chairman in the preceding year.

The Board fulfils all statutory duties pertaining to the Association’s governance, and sets policies and strategic objectives acting on proposals from the Director General.

To ensure balance among the elected members of the Board, each of the three categories of institutional membership – suppliers, generators and general – must be represented by at least two members.

Board members act as mentors for the various Members Groups. This enables the Board to monitor the activities of the groups and to shape their overall agenda.

Membership meetings

There are two annual meetings where the whole membership is called and can vote, as well as ask questions to the Chairman and Director General about the operations of the Association. At the Annual General Meeting, the accounts are presented for approval and any fee changes or alterations to the fee structure are put to vote. Immediately after the AGM, the Members Council takes place, during which significant developments in the Association are presented to the member company representatives in attendance.

Audit

In 2017, the Board met on 25 April in Toronto and 13 September in London.

There are also two Board sub-committees, whose members serve two-year terms and report directly to the Chairman of the Board:

- The Governance and Nominations sub-committee oversees appointments to the Board and handles Director General and senior staff succession planning.
- The Audit and Finance sub-committee carries out a regular review of the financial health of the Association, and assesses and holds in-depth dialogue with the auditor during the preparation of the annual accounts.

In 2017, the Board met on 25 April in Toronto and 13 September in London.

Moore Stephens concluded that the 2016 Annual Report and Accounts give a true and fair view of the state of the Association’s affairs as at 31 December 2016 in accordance with UK Generally Accepted Accounting Principles (GAAP) and were subsequently approved and signed off by the Chairman and Board of Management on 25 April 2017.

The 2016 Annual Report and Accounts were presented at the Annual General Meeting held in London on 13 September 2017.
Board members

As of January 2018

**Chairman**
- Helmut Engelbrecht
  Senior Advisor, Urenco

**Vice-Chairman**
- Krill Komarov
  Deputy Director General, Rosatom

- Clark Beyer
  Managing Director, Uranium, Rio Tinto

- George Borovas
  Partner, Shearman & Sterling

- Guillaume Dureau
  Senior Executive Vice President, Framatome

- Tim Galz
  President and CEO, Cameco

- Leon dos Santos Guimarães
  President, Eletronuclear

- Mingang Huang
  Chief Economic Officer, CNNC

- Jonathan Isted
  Partner, Freshfields Bruckhaus Deringer

- Kwan-sup Lee
  President and CEO, KHNP

- Denis Lépide
  Senior Vice President, Head of Nuclear Fuel Division, EDF

- Michael Pacilio
  Executive Vice President and COO, Exelon Generation

- Masatoshi Sakaguchi
  Executive Vice President, Chubu Electric Power

- Dongshan Zheng
  Senior Vice President, CGN

- Mingguang Zheng
  Senior Vice President, SNPTC

**Honorary**
- Hans Blix
  Director General Emeritus, International Atomic Energy Agency

- Gerald Grandey
  Former CEO, Cameco and Association Chairman Emeritus

- Peter Prozesky
  CED, WANO
The Secretariat

World Nuclear Association is made up of an international Secretariat of 35 people, covering a broad range of expertise and experience.

The Secretariat is led by Agneta Rising, the Director General, and consists of four departments and one project team for the Harmony programme, each headed up by a manager. Most of the Secretariat work from the Association’s offices in London, UK, and representatives are also based in India, China and Australia.

In 2017 we made changes to the Secretariat to improve efficiency and delivery across all functions: we united the strategic communication and information management teams so that all our communication activities are within one department and we enhanced the Harmony programme team following strong support and momentum in Harmony.
### World Nuclear Association Members

*As of January 2018*

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<th>Name</th>
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Ontario Power Generation
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Peninsula Uranium Ltd.
PGE EJ 1 Sp z o.o.
Pillsbury Winthrop Shaw Pittman LLP
Pinnacle West
Pinsent Masons LLP
Plateau Uranium Inc.
Price Forbes & Partners Ltd.
PricewaterhouseCoopers LLP
Rencel Energy & Metal Ltd.
Rio Tinto Uranium
Risk Engineering Ltd.
Rolls Royce plc.
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Rosenergoatom Concern
RSB LOGISTIC Projektspedition GmbH
Segra Capital Managment, LLC
Shearman & Sterling LLP
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Shimizu Corp.
Silex Systems Ltd.
Sojitz Corp.
South African Nuclear Energy Corp. (Necsa)
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State Nuclear Power Technology Corp. (SNPTC)
Sumitomo Corp.
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TradeTech, LLC
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