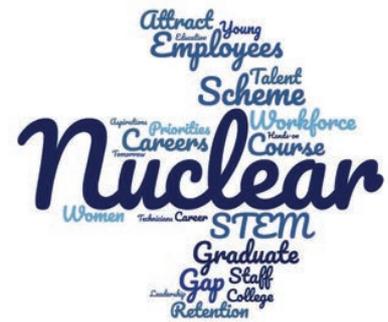


# Skills: challenges and opportunities



NEI speaks to some key industry stakeholders to gain perspective on the skills landscape in the UK and across Europe.

Jean Llewellyn, Chief Executive, National Skills Academy for Nuclear

**Jean Llewellyn was awarded an OBE in 2011 in recognition for her services to the energy industry. She is a prominent figure on the nuclear skills agenda and is well respected and held in high esteem throughout industry and government.**



Europe has 185 operating reactors, 15 reactors under construction and 103 units that have been permanently shut down or are undergoing decommissioning, according to the International Atomic Energy Agency (IAEA).

In some countries, nuclear power is declining, like Germany where they put the nuclear programme on hold post-Fukushima. In others, such as France, it is more stable and slightly growing. And there are new to nuclear countries in Eastern Europe, like Poland, where nuclear is growing. As a result, we are seeing quite a change in skills demands and needs.

There is quite a different skills profile across Europe, but everyone is facing similar challenges such as ageing workforce and lack of diversity.

What is happening now is more collaboration and joint working. NSAN is working on a European project called ANNETTE looking at skills transferability across Europe. From a UK perspective, we have a skills and competency management system called NS<sup>4</sup>P. We are looking to see if we could use this system as a basis for transferring skills across Europe. We are also working with the French organisation INSTN to look at a joint system for hallmarking training programmes in the UK and France, as well as other projects.

## Key challenges

A big issue is a need for increased diversity. In the UK, the nuclear workforce is about 22% female.

This mix needs to improve going forward.

Also, the UK or any of the countries with established nuclear programmes tend to have an ageing workforce. People usually enter nuclear as an apprentice or graduate and stay in the industry for their whole career.

At the other end of the spectrum, countries looking to develop a new nuclear programme e.g. Poland face a different challenge – how to start from scratch to develop a skilled nuclear workforce. With some countries – Germany and others – stopping nuclear operations, this

provides a pool of skilled workers for states looking to build new reactors. The picture of where the skilled workforce is located is going to start moving into newer areas in Eastern Europe.

The main roles that have been identified for potential skills shortages in the latest UK report are nuclear safety case preparation, C&I engineers, reactor operators, site inspectors (regulators), project planning and control, commissioning engineers, electrical engineers, emergency planning, quality assurance, chemists and subject matter experts. Subject matter experts are the future nuclear specialists, which take many years to develop. We used to have a Nuclear Industrial Partnership Project working with Dalton at Manchester and the

personnel. These would be people that run

nuclear sites in future. The industry should be looking to attract people from O&G and other experts that need to be 'nuclearised'. NSAN has a suite of programmes called the Triple Bar Suite – introductions to nuclear courses that can help with this. We are also working with Aston University on a PGCert in nuclear. These are all programmes that people with existing skills can take to learn how to utilise their abilities in a nuclear context.

Transferability of skills across the sector is another challenging area. In the UK, Magnox is reducing the number of people that are working for them. Using a skills and competency

**“In the UK the nuclear workforce is about 22% female. This needs to improve...”**

National Nuclear Laboratory to develop subject matter experts of the future. That initiative involved very detailed training and development, with secondments at various sites across the industry. Funding has now ended, but we are hoping the programme can continue as part of the nuclear sector deal.

A similar challenge is knowledge management and retention. We have a highly skilled workforce in their late 50s and early 60s with deep knowledge of the plant and the sites around the UK. Transferring this knowledge to a new generation is a huge challenge. Most companies do something on an individual basis, but there may be a chance to do something collectively across the industry.

Another issue the industry faces is in the '30-40' age-bracket, where it needs to attract skilled engineers and scientists from other sectors. The nuclear industry has a good inflow of new blood and experts, but in the middle bracket, there is a shortage of suitably qualified and experienced

management system such as NS<sup>4</sup>P people can assess skills against the nationally agreed competency framework, which enables movement between companies.

There is a real challenge regarding supply chain skills because they are all waiting for contracts. You can't develop the workforce without a contract but can't win a contract without a skilled workforce. The UK had a programme called Give2Gain, which gave companies access to matched funding from the government for skills development in return for promoting the STEM agenda. This initiative drove an increase in skills development across the nuclear sector. Funding has stopped, but we are looking to extend Give2Gain through the sector deal. The workforce can't become proficient in a few months – most apprenticeships are three years. It is a slow process to build up skills, knowledge and behaviours. So action is needed now to be ready for the future growth in the nuclear programme.

Sarah Moore, Europe, Middle East and Africa Region Talent and Development Management Manager, Human Resources at Westinghouse Electric Company LLC



**Sarah Moore has worked in the nuclear industry for 33 years in both human resources and training roles. In her current position, Mrs Moore supports the Europe, Middle East and Africa region in Talent Management where she is responsible for implementing consistent and standard processes across the European countries. She works with the Talent team in the Corporate Centre to provide European input when developing new programmes and processes.**

**What is your perspective on the skills situation within the nuclear industry, and how is this changing?**

It doesn't matter which area of the nuclear industry we are focusing on, whether new build, fuel manufacture, reactor maintenance, or decommissioning, the same skills are required to be successful and competitive. We are now in a very competitive environment as we are competing with other large-scale, national infrastructure projects that are simultaneously recruiting candidates with the same skills, such as engineers and project managers.

The industry as a whole is facing a demographic challenge over the next few years as it has an ageing workforce. Westinghouse is no exception. Our challenge is to retain within the business key proficiencies and intelligence from retiring employees. We do this through initiatives such as knowledge transfer, succession planning and robust training regimes.

**What issues are you facing when it comes to skills and recruitment?**

The issue begins in the schools and colleges, where we must help students to become aware of the diversity of roles available in the nuclear industry and attract them into the industry, which is challenging in such a competitive environment. Westinghouse participates in organisations which are helping to educate

students about career choices in nuclear, such as Women in Nuclear and the Nuclear Young Generation Forum.

**What initiatives do you have to attract and retain staff?**

At Springfields, one of the ways Westinghouse has attracted new staff is by offering apprenticeships through our acclaimed Apprentice Training Centre. In operation for more than 65 years, we have trained apprentices in all aspects of complex plant operations. As further incentives, we have a well-established graduate scheme called Aspirations, and we have recently introduced Nuclear Engineering Degree Apprenticeships.

We also have an excellent retention record at Springfields, where 33% of our current workforce began their careers by undertaking an apprenticeship through our Apprentice Training Centre, and a number of these former apprentices now occupy positions on the Board of Directors. There are also many corporate initiatives, such as a new leadership development programme, that will further develop our leaders to deliver our people management strategy. Additional training concessions are available to encourage employees to develop their careers further.

Our most important asset is our people, their experience, knowledge and of course,

skills. Ensuring this knowledge and experience are retained within the business is extremely important to our future success. We actively encourage our graduates and apprentices to rotate around different roles and areas during their training periods. This helps them learn from others and gain experience, together with an understanding of all aspects of our business, which enhances their skills and knowledge and helps them to find the work which most fulfils them professionally.

**Would you say there is a skills 'gap' in the nuclear sector? What opportunities are there to address this?**

Externally, the industry continues to work to attract new talent and build the required education and training facilities to close any gaps.

Internally at Springfields, opportunities are made available for our people to develop into new or different roles where possible. While our long-standing Apprentice Training Centre builds skills in operations across a plant, our five-year Nuclear Engineering Degree Apprenticeship programme is designed to allow graduates to undertake a broad range of engineering training and technical specialist roles in the nuclear sector. These programmes help to ensure that the industry continues to employ highly skilled and professionally qualified personnel and to close anticipated capability gaps for the sector in the UK.



Nuclear needs to attract employees from O&G and other sectors

Barbara Jones, HR Director, EDF Energy

**Barbara Jones is HR Director and Board Member for EDF Energy's Nuclear New Build Projects. She has responsibility for all aspects of HR as well as leading the development of education, employment and skills initiatives to ensure availability of a skilled workforce for the construction, commissioning and operation of four new nuclear power stations in Somerset and Suffolk.**



**What are your priorities for training and recruitment over the next 12 months?**

One of our main priorities for the next year, and beyond, is looking at increasing the number of female engineers we have within the company. Our apprentice and graduate recruitment programmes play a vital part of that goal.

Research by the Social Market Foundation has highlighted the wealth of opportunities for careers in science and engineering, yet the number of women entering these careers remains low.

EDF Energy recruited five times the national average of women onto its engineering apprenticeship in 2016 (21%). The national average is just 4%.

The company is determined to tackle the current gender imbalance in STEM, and we're hoping to increase the number of women we recruit onto our STEM apprenticeships to 30% by 2018.

We've seen a direct correlation between our activities with schools and at careers fairs targeting secondary school girls, and the number of young women who subsequently apply onto our engineering apprenticeship programme. This is why we're investing in initiatives such as Pretty Curious. Last year, we hosted more than 1000 12-13-year-old girls at events across the country to give them hands-on STEM experiences and introduce them to female role models working in the industry.

This summer, we are piloting a residential summer school for 15-16-year-old girls to give them an insight into what apprenticeships are like, meet female engineers and also senior

people from the business and gain valuable employability skills.

**What issues are you facing when it comes to skills and recruitment?**

During the apprentice recruitment process, it was noted that potentially suitable technicians would not make the right academic grades and that they needed a separate route to EDF Energy or other companies' apprentice programmes.

Since 2011, EDF Energy has sponsored the 'Access to Apprenticeship' programme at colleges near its sites at Hinkley Point B and Heysham.

The programmes, at Bridgwater and Taunton College and Lancaster and Morecambe College, are aimed at young people without the minimum qualifications to apply for an advanced apprenticeship scheme.

The course lasts for an academic year and those on the course, around 20 at each college, work towards a BTEC Level 2 qualification in Engineering and Applied Science, which will develop the students' core engineering skills and knowledge.

The courses also offer regular visits to either Heysham or Hinkley Point power stations. The colleges also invite in guest speakers to give valuable insights into the workings of the industry.

On successful completion of the course, students can enter the aptitude-testing phase of the EDF Energy recruitment process. Many students have now obtained EDF Energy apprenticeships with many others successfully joining other local area engineering companies.

**What initiatives do you have to attract and retain staff?**

Retention on the EDF Energy apprenticeship is outstanding; with success rates exceeding 95% each year. Graduating apprentices are offered full-time positions with EDF Energy on successful completion of their apprenticeship with very few exceptions and after that job security is excellent.

There is also an understanding that the apprentice schemes open a route into a potentially wider engineering career. EDF Energy does offer its employees continuous development opportunities to take degree and post graduate courses.

**Would you say there is a skills 'gap' in the nuclear sector? What opportunities are there to address this?**

EDF Energy recognises the need to ensure there are enough trained people to make the step into the engineering and energy sectors.

Apart from the STEM and Pretty Curious campaigns, each of the company's generation sites has a Visitor Centre, and this allows pupils a chance to see behind the scenes of a power station. The stations will often have science days or careers days for young people, which again ensures the skills message is promoted.

As well as the EDF Energy-sponsored 'access to engineering courses', the company has also joined forces with Bridgwater College to launch a Nuclear Scientist Degree Apprenticeship which will address the gap in higher level skills as work starts on our new fleet of UK-based nuclear power stations.

Students are offered practical experience at nuclear sites, and in September 2017 the first year of study will take place at EDF Energy's training facility at Cannington Court, near Hinkley Point.

Students will be awarded a full Honours Degree with added real, practical workplace skills and the financial security of a regular pay packet.

Also linked to Hinkley Point C, the company has a new commercial apprenticeship programme, where those on the scheme study for five years for a university-level qualification while gaining hands-on experience.

At the end of the apprenticeship, they will move into a permanent role in the commercial team with responsibility for managing their own portfolio of contracts.



Mike Roberts, Director of Corporate Services, Nuvia

**Mike is a qualified Chartered Accountant with more than 25 years' experience in Finance and Senior Management positions. He joined Nuvia in 2002 and is now Director of Corporate Services. His remit covers Finance, HR, Assurance, legal and property services, IT and supply chain strategy. Mike's experience and technical knowledge are vital in setting the company's strategic direction and in developing a forward-thinking HR strategy for the business.**



**What is your perspective on the skills situation within the nuclear industry, and how is it changing?**

The construction of new nuclear power plants, combined with growing decommissioning activities on the UK's legacy portfolio has created a major skills shortage in the nuclear industry, across a variety of roles. Compounded by an ageing workforce, the issue has become increasingly important in recent years. The need to act has been recognised by all parties within the industry, and we welcome the recent inclusion of nuclear as one of the key sectors under the government's Industrial Strategy.

There is clear evidence highlighting skill shortages that the industry will face over the next ten years and encouraging signs that steps are being taken to bridge the gap. However, we remain at the early stages of addressing these. The picture is constantly changing, not least due to demographic, social and political change in the UK, Europe and further afield. These factors are influencing how the industry is organised and affecting how, as the supply chain, we have to prepare ourselves for the skills shortage.

**Would you say that there is a 'skills gap' in the nuclear sector? What opportunities are there to address this?**

Across the whole economy, it is widely recognised that we face skills shortages in Science, Technology, Engineering, Maths (STEM) subjects. This general challenge is heightened further for businesses, like Nuvia, which operate in specialist sectors. It is especially the case in nuclear, which has traditionally demanded that people demonstrate significant practical experience as well as having the right technical capabilities.

Industry and Government are beginning to work together more effectively, taking a holistic approach to developing better systems to address current and identify future skills gaps. Nuvia fully supports this approach and actively contributes to the development of these skills by being a member of the National Skills Academy Nuclear (NSAN) Advisory Board and Standards Advisory Group. Their combined efforts provide feedback directly to the Nuclear Skills Strategy Group (NSSG) on how to deliver the UK nuclear skills strategy.

In addition to the work we do with NSAN, we support numerous schools across the



Apprentices and colleagues at the Nuvia Apprentice Awards in 2017

UK in promoting STEM-based subjects and careers. Our Apprentice Scheme and Graduate Programme continue to go from strength to strength and 2017 will see our largest Apprentice intake since we relaunched the scheme in 2008. We will reach our initial target of 5% of employees being recruited through an apprenticeship route in September of this year; naturally, we see this as a starting point and will continue to invest in the scheme to meet our future needs.

I believe that the Government's Industrial Strategy is a step in the right direction; however, there is much to do now before we start reaping the benefits tomorrow. One area where we can make a difference quickly is to simplify the process for those wanting to enter the nuclear industry.

We have offered to support NSAN in the further development of the Nuclear Training Network – an online portal designed to facilitate easy access to industry skills and training programmes, enabling individuals to develop the skills and knowledge required to work in different sectors.

The Apprentice Levy also presents a huge opportunity to develop the skills of the workforce further.

**What issues are you facing when it comes to skills and recruitment?**

Flexibility and agility will be key for organisations as we continue to react to a changing world and how people view their work/ life balance.

In an industry with a steadily increasing age profile, it will only take a modest upsurge in the market to accelerate the skills and capacity gap. Apart from the obvious issues of competition for resources and resultant pressures on wage rates, all employers will be looking to differentiate themselves and become an 'employer of choice' brand.

We are seeking to address these issues by

taking a long-term view of people development. From engaging with local schools, and STEM activities, through continued investment in our Apprentice Scheme and Graduate Programme we endeavour to build long-term relationships with our people, one that aids retention and reduces turnover rates.

When it comes to recruitment, we take a detailed forward view on our skill needs, aiming to recruit ahead of the curve where feasible to mitigate any gaps on project delivery.

Another important factor is not to compromise on our recruitment decisions. Maintaining standards is essential, and it is much better to wait for the right candidates to supplement our already excellent team.

**What are your priorities for training and recruitment over the next 12 months?**

We are fortunate to be part of VINCI, the world's largest integrated concessions and construction group. This provides access to a truly world-class talent pool, as well as allowing us to benefit from a global HR team infrastructure. This allows us to put people at the heart of all we do.

Over the next 12 months, we will continue investing to improve the quality and skills of our employees. Under our annual performance development review, all employees have an opportunity to discuss their personal training needs with line managers. This...allows us to create appropriate tailored training plans for all and in turn improve services we provide to our customers. It will always be a vital ingredient for our continued growth and success.

More generally we're continuing to expand our Leadership and Line Management programme, with a view to ensuring that we have a sufficiently experienced team, one that supports our succession plans and also guarantees the provision of suitably skilled employees in the right place and at the right time.

Callum Thomas, Chief Executive Officer, Thomas Thor Associates

**Callum Thomas is the founder and chief executive officer of Thomas Thor Associates, an executive search, recruitment and consulting firm dedicated to the global nuclear industry.**



**Would you say there is a skills 'gap' in the nuclear sector? What opportunities are there to address this?**

That is a very good question. For the last eight years, people have been talking about a skills gap, and it has not really materialised. Two of the primary reasons for this are that the demand estimates for skills have been based on projects and workstreams happening that have been delayed or cancelled, and that the "retirement cliff" has been more of a slow decline than a cliff because many people continue to work in the industry after retirement age. We do see a squeeze in certain areas such as I&C engineering, project control, and in hiring senior people with rare skill sets but these have always been there.

In operating facilities across Europe, the

skills gap has not yet started to bite. Often people over retirement age continue to work as consultants, and we see less attrition of engineers and technicians to other sectors such as O&G because they are not hiring intensively.

On the project side, a skills gap could materialise very quickly if mega projects in nuclear new build, decommissioning and defence coincide with other big infrastructure projects. For example, in the UK, if Hinkley Point C, Horizon and/or NuGen, NDA estate decommissioning, Trident and HS2 all happen concurrently, the strain on skills in the UK will be immense. In addition, if there is a head-to-head competition for engineers, the nuclear industry could lose out to O&G or other sectors with higher salaries.

To summarise, we do not see a serious skills issue for organisations, not yet, especially not

in the UK. The skills gap has always been three years away, and I believe it is still currently three years away.

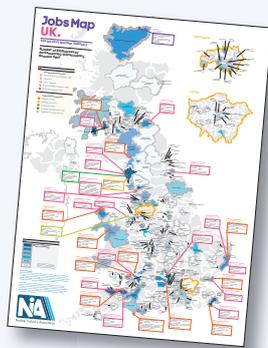
The main opportunity now is for the industry to work on the employer brand of nuclear. People don't associate nuclear with a great career opportunity, but when they learn about what the industry has to offer their interest levels rise rapidly. The best approach is to have a joined up effort in the industry, promoting the employment opportunity to increase the number of graduates and experienced people joining the industry and improve the brand's image. In many countries, such as Canada, Slovakia, UAE and China, nuclear is considered a prestigious industry to work in. This used to be the case worldwide and with the right joined up efforts it can be again.

Numbers

**65,000**

people are employed in the UK nuclear sector and this figure is set to double with construction of new power plants at Hinkley Point C, Wylfa Newydd and Moorside.

Source: NIA Civil Nuclear Industry Jobs Map 2017



**22%**



of the UK nuclear workforce is female across all levels and disciplines. It is around 28% in civil sector, but just 12% in defence.

Source: NSSG Nuclear Workforce Assessment 2017 (Data as of October 2016).

Talking points

"People need to join the nuclear sector and not a particular company..."

"Whilst **efforts** have been made by industry and the **sector skills council**, too often there is a reluctance to employ individuals with limited sector experience."

Mike Roberts, Director of Corporate Services, Nuvia

"The nuclear industry may have to **increase wages** to keep its staff, especially in countries **expanding nuclear** initiatives"

Source: Global Energy Talent Index (GETI) 2017

"In the **UK** it is estimated that **70%** of the **workforce will retire** by 2025..."

Adam Spelman, regional director for the UK at NES Global Talent

**80%** of the **nuclear workforce** uses skills that are shared with other industries.

Source: NSSG Nuclear Workforce Assessment 2017

✉ Share your view

Are you facing similar challenges in your organisation? What do you see as the main issue when it comes to skills and recruitment? Please contact the editor, Caroline Peachey (caroline.peachey@compelo.com) to participate in Part 2 of this feature.