

Nuclear Sector Skills Strategy: Government and Industry in partnership

Sustaining Our Nuclear Skills



Front cover image of submarine – credit BAE Systems

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Ministerial Foreword

The UK is entering a new stage in its nuclear history. The construction of new nuclear power plants, a growing decommissioning portfolio and delivery of the Successor submarine class to sustain our deterrent will create enormous investment in the sector over the next decade.

The result will be massive growth in the sector matched by vast economic opportunities. The Government estimates that businesses will invest more than £45 billion to develop the first three nuclear power plants, in Anglesey, Cumbria and Somerset, alone. This surge of nuclear investment will create thousands of jobs, drive regional growth and help to build the UK's supply chain capability.

The Government and industry are working to build a skills base capable of meeting the demands of the new nuclear sector. There are substantial challenges to overcome. The nuclear workforce is ageing and attrition rates are high and growing as a result. Industry's own research forecasts that the workforce must grow by 4,700 people a year over the next 6 years. Over the same period 3,900 people are expected to leave the sector, mostly due to retirement. This means that the sector must recruit 8,600 people every year.

This is a sizeable challenge, but one which we must grasp. If we fail to do so, we will be doing the sector, and the UK as a whole, a disservice. A shortage of skilled workers will create competition for specialist skills, pushing up labour prices. This threatens to increase the cost of critical national projects and potentially raise the UK's reliance on foreign expertise for civil projects. It will raise particular challenges for defence, where security considerations require UK nationals. There is a strong case, therefore, for building a suitably qualified and experienced workforce within the sector. This will meet the future needs of the sector and create jobs for thousands of young people who might otherwise miss out on a rewarding career in the nuclear sector.

In 2013, the Government, in partnership with industry, published the Nuclear Industrial Strategy (NIS). The NIS identified priority areas where Government and industry can work together. It set the strategic direction for collaborative action on skills and initiated the work of the Nuclear Industry Council (NIC). Since then the nuclear landscape has changed. At the same time, the NIC's work on skills has clarified the skill challenges in the sector.

Sustaining Our Nuclear Skills therefore comes at a pivotal moment. It provides an opportunity to assess the current skills provision across the sector, to highlight the significant progress made over recent years in delivering a world-class nuclear workforce for the future, but also to consider the challenges we still face in realising that vision. It sets the Government's ambitions, including clear goals, for delivering a sufficient, high-quality and diverse nuclear workforce across the whole of the sector that is renowned globally for its professionalism, experience and excellence.

Crucial to this approach is continued partnership between Government and the wider sector including industry and its representative organisations, national regulators, the research community, skills bodies and providers. This partnership approach requires recognition of the challenges, commitment to action and long-term planning.



A handwritten signature in blue ink that reads "Matthew Hancock".

The Rt Hon Matthew Hancock MP

**Minister of State for Business,
Enterprise and Energy**



A handwritten signature in blue ink that reads "Philip Dunne".

The Rt Hon Philip Dunne MP

**Minister for Defence Equipment,
Support & Technology**

Executive Summary

1. For the first time in decades, the UK's nuclear sector is set to expand. The Government has initiated an ambitious programme to construct up to five or even more civil nuclear plants by 2030, while at the same time carrying out a large programme of decommissioning work. Over almost the same period, the Ministry of Defence (MOD) will develop the Successor submarine class. These programmes, coupled with the UK's extensive existing nuclear operations, will drive an expansion of the nuclear workforce from 70,000 to 98,000 by 2021.
2. The development of these nuclear skills will not only enable the successful enlargement of the nuclear sector but also help to ensure the UK's economic growth and prosperity. It will provide job opportunities for tens of thousands, better place industry to bid for contracts overseas and lay the foundation for further advances in the sector.
3. The challenges of building the UK's nuclear skills base are, however, significant. The UK's existing expertise lies primarily in the operation and decommissioning of nuclear plants rather than construction. It will need to reskill workers or attract new skills to meet the changing workforce profile.
4. The sector will need to compete with others for the many Tier 1 skilled workers – those without specialist nuclear skills – required for construction, project management and technical roles. It will likely also need to source talent from overseas to meet the demand. Fewer highly-skilled specialists from Tiers 2 and 3 will be needed. Yet as these workers take between five and twenty years to develop their skills, they may prove more difficult to source. Creating a pipeline to foster these skills, coupled with processes to accurately predict potential skills shortfalls will be vital.
5. While the sector is focused on building a large enough workforce to deliver the new nuclear programmes, it has not lost sight of two further challenges. First, the workforce must maintain its global reputation for excellence by continuing to incorporate international best practice in training and development. Second, the sector must diversify its workforce and, in particular, increase the proportion of women in the workforce. Currently fewer than 25% of skilled nuclear workers are female.
6. Individual organisations will confront these skills challenges first and foremost, taking action to meet their specific skills needs. However, these individual efforts must be matched by decisive collaborative action to build the right pool of nuclear skills. Organisations alone cannot nurture the necessary talent given the long lead times for training and uncertainty about their own future skills demand.
7. For these reasons, the NIC in partnership with Government, has set the following common goals:
 - i. Aspire to meet 90% of the sector's skill demands from the UK workforce by developing the right profile and pipeline of skills to meet the future demands of the sector.
 - ii. Ensure the nuclear workforce's expertise is unsurpassed globally by developing training, development and certification programmes of the highest quality.
 - iii. Cultivate a more diverse nuclear workforce, including by increasing the proportion of the sector's workforce who are women to 40% and the proportion of women in senior management to 25% by 2030¹.
8. The NIC will retain oversight of, and take action to meet, these goals through its Skills Workstream. The National Skills Academy for Nuclear (NSAN) – the collective forum for

¹ Interim targets for the proportion of women in the workforce will be 25% by 2020 and 30% by 2025.

employer ownership of the nuclear skills agenda - will guide this, providing the necessary leadership while working closely with Nuclear Energy Skills Alliance partners.

9. The NIC and nuclear organisations recognise that they need to take a holistic approach to achieving these goals, which we term the Skills Lifecycle. This means seeking to attract the right people to careers in nuclear; finding innovative ways to recruit and retain them; identifying potential skills gaps and taking action; putting in place high quality professional development programmes; maintaining the high level research skills which government, industry and regulators draw on; and tackling the dual challenges of transferability of skills and knowledge management.
10. As part of this work, Government, in partnership with industry, is developing two flagship initiatives. The National College for Nuclear (NCfN) will create and deliver industry-agreed curricula for nuclear skills – initially through campuses in Cumbria and the South West. The Career Path for Nuclear, when developed, will offer sector entrants the opportunity to experience different roles and give them greater freedom to transfer between positions. Separately, Government nuclear bodies will work together to improve the coherence of their training and careers.
11. The numerous skills actions that the sector go a long way towards grasping the skills challenges but there is scope to do more. In the coming months the Nuclear Industry Council will need to consider whether a step change in its activity on nuclear skills is required. The Skills Workstream will support this discussion by providing an assessment of the current skills initiatives and accurately forecasting the influx of skills into the sector in coming years.

The Changing Face of the UK Nuclear Sector

12. As the first country to successfully develop civil nuclear power and as an operator of nuclear deterrence, the UK has built a thriving nuclear sector over sixty years. We have developed a capable supply chain and an enviable global reputation for quality, safe and reliable civil and defence operations, underpinned by a world-class regulatory regime and an expert workforce.
13. Nuclear power provided 19% of the UK's electricity from 9 nuclear sites across the UK in 2013. Almost all of these plants are scheduled to reach the end of their lives by 2030. The Government has initiated a new nuclear programme to replace them, so maintaining secure, affordable and low-carbon power supplies for the population.
14. Industry has set out plans to deliver 16 GW of new nuclear power by 2030 in response. Delivering this massive programme will be challenging, requiring high levels of capital investment and manpower. Industry's proposals call for at least 11 new nuclear reactors at five sites: Hinkley Point C and Sizewell C (both developed by NNB Genco); Wylfa Newydd and Oldbury (Horizon Nuclear Power); and Moorside (NuGen). The development of further sites may follow.
15. Managing our legacy nuclear waste also remains a priority for the Government. The Nuclear Decommissioning Authority (NDA) is responsible for implementing government policy on radioactive waste as well as the effective and efficient clean-up of this legacy at 19 nuclear sites. It contracts the work to Site License Companies. As existing nuclear power stations reach the end of their operating lives over the next decade, they will need to be decommissioned also. Over similar timescales the construction and operation of a geological disposal facility (GDF), a multi-billion pound project, will begin.
16. The defence sector faces its own challenges as it supports our existing fleets of nuclear submarines, manages the UK stockpile of nuclear warheads, continues to build the new Astute class and prepares to deliver the Successor submarine class to sustain our deterrent in the future². This will require MOD to continue to act as an Intelligent Customer and operator.
17. The on-going safety, security and success of both the civil and defence programmes are underpinned by the continued effectiveness of their respective nuclear regulators. In the face of an expansion of civil and defence nuclear programmes, the demands on these regulators will be substantial.
18. These nuclear projects present significant economic opportunities mirrored by major challenges for the UK. In the civil and defence programmes building, maintaining, operating and decommissioning our nuclear assets is only possible with the right workforce – both in the operating organisations themselves, and in the contractors and supply chain companies.
19. These national programmes must be seen in the context of a nuclear renaissance in other parts of the world as countries including China, India and Russia seek to establish or bolster their civil nuclear power. This global market offers attractive opportunities for UK firms and skilled labour alike. Equally, international players are entering the UK market and we are already drawing on expertise from far afield. This international expertise is vital, but throws into relief the need to ensure UK skills capability in the nuclear industry.
20. The expanding civil and defence programmes will need to substantially grow the skilled nuclear workforce. This challenge will be compounded by attrition from the ageing existing

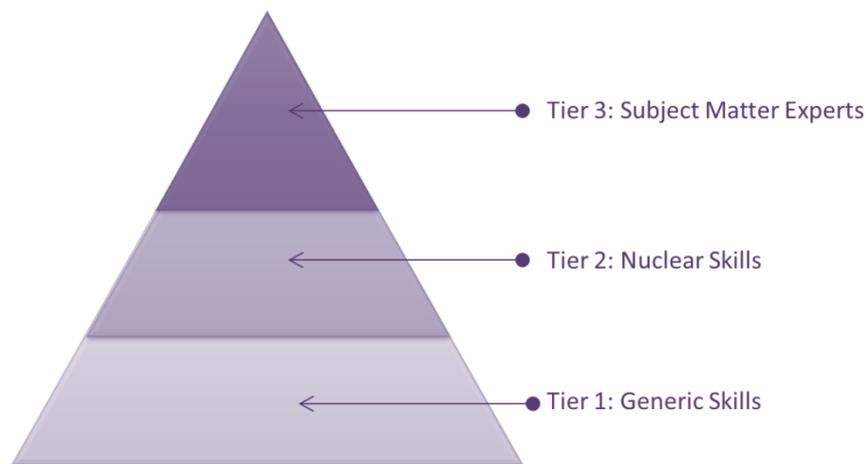
² See "Securing Britain in an Age of Uncertainty: The Strategic Defence and Security Review", Cm7948, October 2010.

workforce and the long lead-time to develop nuclear experts. Organisations within industry and Government risk being forced to compete for skills if the numbers of workers are insufficient.

21. Sustaining our Nuclear Skills is therefore crucial to our national prosperity and security. This document updates the [Nuclear Industrial Strategy](#), which identified priority areas for Government and industry to work together. It sets out the shared Government and Industry vision for nuclear skills across the sector based on the challenges it faces. It clarifies our objectives and the activities already in place to realise them. And it proposes a series of next steps for Industry and Government to confront the challenges.
22. The civil and defence nuclear programmes operate separately but draw on the same pool of skills for most activities. This paper therefore sets out the common efforts to build skills capacity for both programmes, while differentiating the civil and defence approaches to skills where they diverge.

The Skills Requirements and Challenges

23. Workers in the nuclear sector can be placed broadly into three Tiers. Ensuring an adequate labour force in each Tier poses different challenges:



The Three Skills Tiers in the Nuclear Workforce

- **Tier 1 – Generic Skills:** Individuals with skills that can be applied across a number of sectors, including nuclear. Workers with these skills can move between sectors. While these people contribute to the nuclear sector, their primary skillset is not nuclear. This group accounts for the largest number of skilled workers.

These workers will require nuclear awareness training ('nuclearisation') to adapt to the rigorous quality and safety standards of a nuclear site. However, in many cases this training is very short when compared to that required by Tiers 2 and 3. Tier 1 construction workers, such as engineers, project and programme managers and steel fixers, will carry out the bulk of the work to build new nuclear plants and develop the Successor class submarine.

The nuclear sector competes with others for these workers, a potential risk, therefore, is that the skills will not be available in sufficient quantities in some vocations and professions due to demand elsewhere.

- **Tier 2 – Nuclear Skills:** People who have typically worked in the sector for more than 10 years and have developed both knowledge and experience which is nuclear specific. These workers must have a documented combination of qualifications in a relevant area in the sector and experience.

There is less demand for individuals with this level of skill than those at Tier 1. Types of Tier 2 personnel include:

- Senior Scientist roles in nuclear-specific areas such as specialists in fuels, characterisation, materials and corrosion, decontamination, and reactor physics;
- Senior Engineering/Designer roles required to design a plant to nuclear standards, assess requirements of geological disposal facilities and undertake structural integrity assessments etc.; and
- Technical Managers needed to develop safety cases, manage large and complex nuclear projects etc.

Given the time taken to develop Tier 2 skilled workers, it is vital to have a sufficiently large pipeline of these workers in development at all times. For developing nuclear nations, the UK provides an environment where their people can gain nuclear experience unavailable in their own countries.

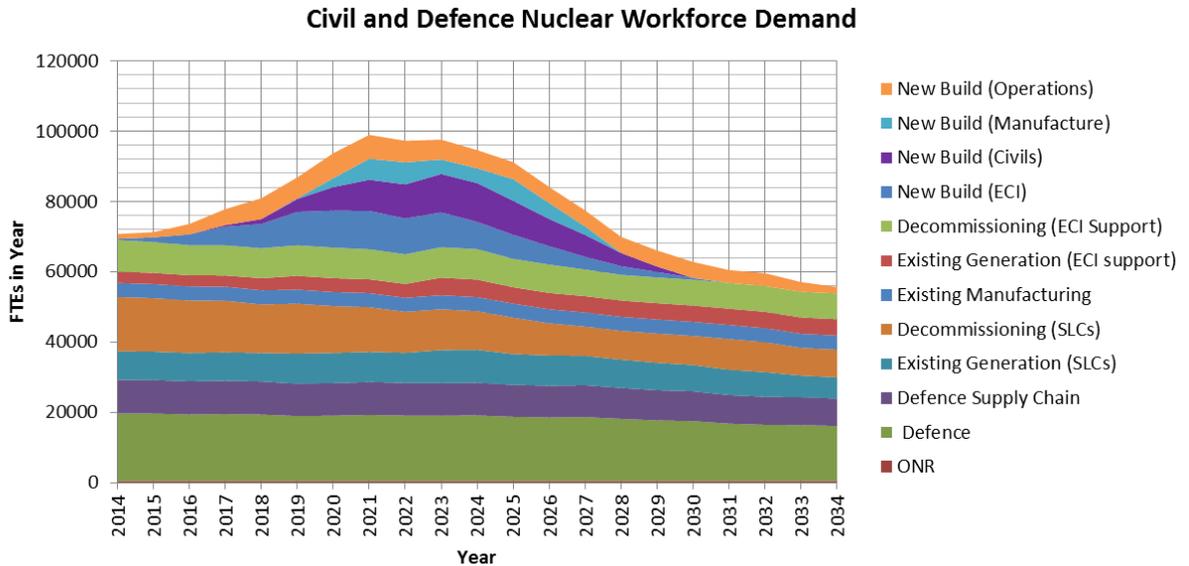
- **Tier 3 – Subject Matter Experts:** Those who typically have 20 or more years in the sector and have knowledge and experience which is nuclear specific, technically and often fundamentally important to the future of the sector. These experts ensure safety and performance are underpinned by the highest quality science and engineering available.

There are very few Subject Matter Experts. Examples of these include Principal or Chief Scientists, Engineers, and Technologists; Senior Fellows as internationally renowned experts in nuclear-specific fields, and Director of Engineering,

In addition to the pipeline challenge that Tier 2 workers also present, the scarcity of Subject Matter Experts is a key problem. For any given area there may be a handful or fewer such experts. Succession planning and knowledge management is therefore crucial for any organisation which relies on these experts. Internationally, Subject Matter Experts are sought out for their specialist knowledge, providing advice to either utilities or regulators, often in an independent capacity.

24. The civil and defence programmes can secure Tier 1 skills in many ways: training workers with short-term and targeted training programmes, such as apprenticeships; recruiting from other sectors (there is significant interchange with the oil and gas industry); or seeking to import skills from overseas. A combination of all three approaches will be required to meet the construction requirements of new nuclear.
25. Tier 2 and Tier 3 skills are more specific to nuclear and take longer to develop. In general organisations must rely on their own training and skills pipeline to deliver much of this development. Within the UK, collective action to build and align nuclear courses with targeted and accelerated experience across the sector may be required to build the higher level skill-base needed to support the expansion of the sector.
26. Furthermore many of the existing Senior Scientists and Subject Matter Experts gained the expertise necessary for their position by working on R&D programmes managed through national laboratories. Such programmes will remain a key component in developing such experts. The Nuclear Innovation and Research Advisory Board (NIRAB) has identified the need for a publicly funded R&D programme which, if implemented, would meet this need.
27. Internationally, there is an opportunity for UK companies to offer the necessary nuclear training and experience within an established industry, and to supply skills to an international market.

28. Working through the Nuclear Industry Council (NIC), employers and skills bodies have developed a detailed analysis of the future skills demands of the UK nuclear programme and existing available skills - the [Nuclear Workforce Assessment 2014 \(NWA\)](#). This is an essential first step to assess what interventions may be necessary to address the future nuclear skills gaps across the three Tiers. The NWA will be refreshed annually to ensure that this picture remains current.



29. The chart above shows the projected total nuclear workforce demand, for both civil and defence and for all three Tiers, over the next two decades taken from the NWA. The demand is calculated in terms of Full Time Equivalent positions (FTEs). Assumptions about the timing and scale of the various different nuclear projects underpin this model. These assumptions may change over time, causing a corresponding change to the demand profile. Demand profiles for the five planned new civil nuclear power plants are included in the chart above.
30. In 2014 the total demand for skilled nuclear workers was 70,000 FTEs. This is expected to rise as both the civil and defence new build programmes gather pace. Demand is forecast to peak in 2021 at 98,000 FTEs, an expansion in demand of about 4,700 per year from the current figures.
31. Over the same period, the NWA forecasts that the existing workforce will shrink by about 3,900 per year as workers retire or leave the sector (the average age of workers in the nuclear sector is now over 50). This suggests – depending on the age at which people retire - attrition of the existing workforce of 23,000-24,000 by 2021, implying overall 51,600 skilled employees will need to enter the sector by then.

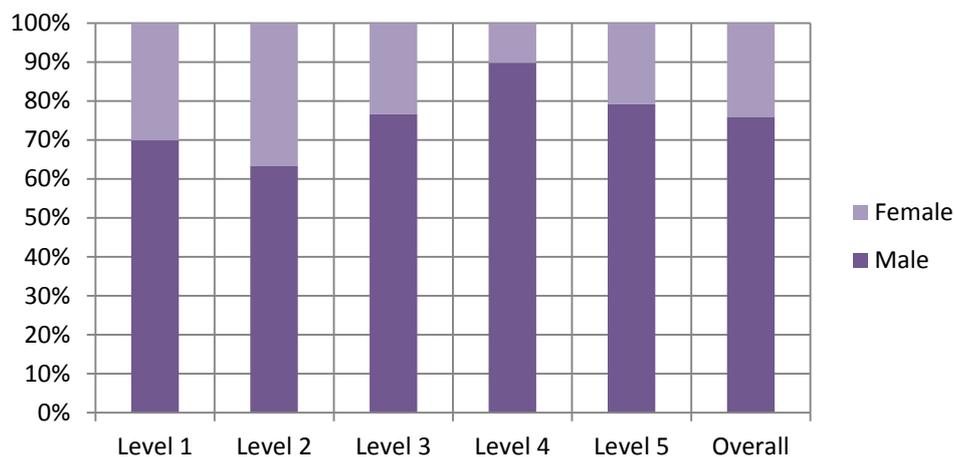


Courtesy of BAE Systems

32. Civil nuclear new build will drive the majority of growth in skills demand as the construction of each plant will require a large workforce. The proportion of workers associated with new power plants, currently about 3%, will increase to 35% in the period to 2021 as the new build workforce grows by 33,000. At this point, at least 5,000 workers are expected to be required on each of the civil nuclear new build sites.
33. Over the same period the demand for a skilled workforce across rest of the sector will decline by 7% from 68,000 to 63,000 although demand in the defence sector will rise somewhat. Despite this reduction in the nuclear decommissioning activities, age demographics will lead to increased recruitment demands even in this area. The NDA are reliant upon scarce and highly skilled people with a blend of experience in areas such as major projects, engineering and nuclear safety and regulation to deliver its nuclear decommissioning and waste disposal activities.
34. There are four stages to the lifecycle of a nuclear power plant: design, construction and manufacture, operation and decommissioning. The skill set the workforce requires at each stage is correspondingly different, and the technical leadership needed reflects these differences. In the UK, our existing civil workforce has strong expertise in operations and decommissioning, though there is more recent experience of construction and manufacture in defence. Retaining this expertise despite an aging workforce will be a key priority for the industry.
35. It is in the area of new nuclear construction, and in particular Tier 1 works, therefore, where the pressure for skills is likely to be most acutely felt by industry. However, the national nuclear regulators may also come under pressure as they expand to regulate the nuclear new build sites. Regulatory work requires skills at Tiers 2 and 3 which will be more difficult to develop or recruit than the Tier 1 workers involved in the construction.
36. The rapid expansion expected in workforce demand raises a real possibility that the sector have difficulty recruiting and training sufficient staff numbers to meet its needs. Existing nuclear operations will also be at risk: skilled staff in the Government and Defence programmes may be attracted to work instead in the new construction programmes.
37. The NWA highlights some vocations and professions, such as steel fixers and safety case specialists that may be in particularly short supply over the next decade. These are detailed, together with the sector's response on page 16

38. It is not possible to fully assess the future skills gap on a profession by profession basis without better quantifying the 'supply' of new skills as a result of training and recruitment. This essential work is planned in the future and is discussed on page 17.
39. Beyond the nuclear sector, the UK has a significant infrastructure programme over the next 10-20 years. Similar skills will be needed in other energy infrastructure deployment, road-building, rail, telecoms and airport expansion. This may create significant competition for skills, in particular in construction. The timing and transferability of skills between infrastructure and other sectors, such as oil and gas, into the nuclear sector also needs to be considered to better understand the availability of skills in the future.
40. The attraction of an international workforce is possible in some parts of the sector, and will be relied upon for some construction work. However, other nuclear-specific jobs will be restricted to UK nationals.
41. In addition to these challenges the sector must expand its recruitment base. It remains male dominated, with only 11-25% of organisations' workforces being female. Organisations in the sector are therefore seeking to attract more women in order to expand the total pool available to work in the nuclear sector, but there is substantial work still to do.

Illustration: Gender split of NDA workforce from apprentice (level 1) to graduate (level 5)



Delivering the Right Skills for Nuclear

42. The UK plans to deliver the majority of the necessary essential skills to meet the sector's requirements through national Science, Technology, Engineering and Mathematics (STEM) education models and higher education in combination with organisations' in-house training and targeted support from accredited skills bodies.
43. Many of the organisations in the nuclear sector have their own training and development programmes based on international best practice. Their training is designed to deliver qualified and competent staff across the engineering, maintenance, operations and scientific technical support sectors to a high standard. It is underpinned by programmes to ensure individuals remain Suitably Qualified and Experienced (SQEP) to meet industry demands throughout their careers.
44. This in-house approach to meeting the demand for nuclear skills has, until now, proved effective in meeting nuclear organisations' skills needs. Indeed, for many Tier 2 and Tier 3

specialists the in-house approach is essential – the skills involved are so nuclear-specific and, in some important areas, niche, that the potential for lateral entry recruitment is low.

45. However, as it takes many years to develop an individual with the necessary nuclear skills, this approach relies heavily on organisations being able to accurately forecast their future skills need. While this may be feasible for the largest organisations in the sector, it is far more challenging for contractor companies including small and medium-sized enterprises. Without certainty over future contracts and therefore future skills demand, these companies cannot



Courtesy of the NDA

develop the necessary pipeline of skills they may need.

46. Recognising the unprecedented demand for additional skills in the coming decade risks leading to skills shortages and rising labour costs as organisations compete for skills, the sector has agreed that collective action to address the skills challenge is also needed, across all levels of the skills pyramid.
47. The Nuclear Industrial Strategy, ratified by the NIC and published in March 2013, outlined a common vision to meet the workforce needs of the UK nuclear sector, allowing the UK supply chain to compete on a global basis for contracts and ensuring the UK approach to skills was recognised as international best practice.
48. In the two years since the Strategy was published, the sector's approach to nuclear skills has evolved. The significant workforce capability and capacity challenges and opportunities, including those in defence, have become much clearer as a result. Industry and Government are therefore in a much better position to set a more specific vision.
49. To tackle these challenges the NIC has agreed three goals in relation to the development of UK skills:
- i. Aspire to meet 90% of the sector's skill demands from the UK workforce by developing the right profile and pipeline of skills to meet the future demands of the sector at all tiers.
 - ii. Ensure the nuclear workforce's expertise is unsurpassed globally by developing training, development and certification programmes of the highest quality.
 - iii. Cultivate a more diverse nuclear workforce, including by increasing the proportion of women in the sector to 40% by 2030.
50. Realising these goals will not be easy, but is vital if the sector is to deliver the various new nuclear programmes and maximise the economic and social benefits for the UK. Those benefits are substantial. The UK supply chain has the potential to capture around 60% of the

overall value of the 16 GW new build programme, equivalent to around £35bn in gross output, creating 30,000-40,000 jobs throughout the supply chain.

51. Industry, Government and the sector skills bodies have collectively achieved much over the last 7 years. They have done more to attract more people into the sector, demonstrating the career pathways and opportunities available, increasing STEM uptake, setting standards and delivering quality training and development to meet the needs of the sector as well as quantifying the future skills requirement. However, the expected growth in demand across the sector may now necessitate a step change in activity.
52. The Nuclear Industry Council will oversee and act to meet these goals through its Nuclear Skills Workstream. NSAN – the collective forum for employer ownership of the nuclear skills agenda – leads this Workstream, in close collaboration with Nuclear Energy Skills Alliance (NESA) partners.
53. Since 2008, NSAN has helped shape the skills agenda to meet industry's needs. However, education in nuclear skills at the further and higher education levels varies in quality and standard. Government and industry have therefore taken the decision to enhance the provision of sector-wide learning by establishing the National College for Nuclear (NCfN). The NCfN will create common curricula for nuclear skills and ensure high standards of teaching and learning.
54. NSAN will need to adapt to the introduction of NCfN and other changes. However, it will remain as important to have a single, coherent voice from industry and skill bodies, which can help to set the direction and counsel Government in future as it is today. The NIC Skills Workstream will have a vital role also in assessing whether the many skills initiatives the sector puts in place are sufficient to meeting the challenges or greater effort is required.

The Skills Lifecycle

55. There are no universal solutions to the skills challenges - different approaches are taken by individual organisations. However, those within the nuclear sector have sought to take a holistic approach to skills, considering how best to attract, recruit and retain skills, as well as preserve the knowledge of those who leave. The elements of this 'Skills Lifecycle' are set out in the diagram below and subsequently detailed.
56. The mechanisms to support the lifecycle exist throughout the civil nuclear sector. This is, in part, the result of licensing requirements which require operators to have in place sustainable skills pipelines to support the civil nuclear cycle from new construction through commissioning, operations, decommissioning and waste management phases of the industry. These requirements are cascaded throughout the supply chain. Similar pipeline models are also in place across the defence sector to ensure viable skills pipelines to support future demands.



1) SECTOR ATTRACTION

57. There are two elements to attracting new recruits to the nuclear sector. First, raising awareness about the varied opportunities available across the sector. Second, ensuring individuals have the right educational base to begin a career in the sector. Many nuclear roles require people to begin training relatively early in their education path, so the focus of activity is on schools and further education establishments.
58. Industry and government work collaboratively with schools to raise the awareness opportunities in the nuclear industry among teachers and students. The aim is to broaden the recruitment pool, including by attracting more women into the sector. Much of this work is undertaken by Government or industry supported bodies. However, major operators and supply chain organisations also run extensive STEM outreach programmes to attract future employees.

Ministry of Defence Case Study – The University Technical Colleges (UTC)

University Technical Colleges (UTCs) provide technically focused education for students aged 14-19. They offer GCSEs, A-Levels and work related engineering Diplomas at Level 2 and 3. The initiative, facilitated by the Baker Dearing Educational Trust has opened 30 UTCs across the country to date, with 60 planned by September 2015.

All UTCs are sponsored and supported by a local university and industry. This provides relevant, real worlds project work and curriculum support to ensure the education offer is well grounded.

The Royal Navy is affiliated with a number of UTCs in order to support the long-term generation of engineering and technology skills. Three UTCs (two of which are affiliated with the Navy) have developed or are developing a nuclear theme to the curriculum:

- Sellafeld Ltd is involved in supporting Warrington UTC and also (together with the Royal Navy) Energy Coast Workington.
- Rolls Royce Submarine Division and the Royal Navy support Derby UTC.

UTCs attract young people to a technology focussed education and, with a greater awareness of nuclear career options, can represent a coherent route to nuclear apprenticeships and graduate programmes.

59. While it is not nuclear-specific, STEMNET, the charity which promotes interest in STEM, has a key role sector attraction. STEMNET runs the STEM Ambassadors programme with funding from the Department of Business Innovation and Skills. The Ambassadors, a network of over 29,000 volunteers from science and engineering backgrounds, many from the nuclear sector, work to raise awareness amongst school children of the range of careers in science and technology and provide stimulating scientific activities to increase their interest. 40% of STEM ambassadors are women.

60. STEMNET also provides the STEM Schools Advisory Network, offering tailored advice to schools about the range of available STEM Education and Enrichment activities which are taking place in their region.
61. Beyond these cross-cutting STEM activities, there are a number of initiatives intended specifically to raise understanding of the nuclear sector and the opportunities in it among young people. These include:
- The Nuclear Island Big Rig: A programme which immerses engineering students in a hands-on engineering experience working under the simulated conditions of a nuclear-licensed site.
 - The EDF Inspire and STEM programme as well as programmes by the Centre of Nuclear Excellence (CoNE) and others run school liaison programmes to improve understanding of the nuclear sector.
 - The National Nuclear Laboratory-supported Smallpiece Trust nuclear summer schools at Lancaster, Manchester and Bristol and Leeds.
62. The Government's three-year 'Your Life' campaign aims to ensure the UK has the maths and science skills to succeed in STEM careers. It is intended to act as a gateway to exciting and wide-ranging careers; and helps employers recruit and retain talent, with a particular focus on attracting women.
63. Continuing to scaling up these activities – in particular the industry's various outreach programmes to schools - and looking for innovative new ways to raise awareness of the sector, will be crucial if the sector is to build the grass roots interest in nuclear careers that it needs to support an expansion in the workforce.

2) RECRUITMENT AND RETENTION

64. Across the sector, recruitment of individuals will need to rise as the growth of civil and defence nuclear programmes gathers pace. At the same time, the sector must recruit a more diverse workforce with high qualification standards and relevant experience. Doing so will mean expanding existing recruitment programmes but also developing innovative approaches to recruiting a larger and broader base of talent – in particular women – to the sector.
65. The major organisations in the sector already have recruitment programmes in place to recruit people from a variety of sources. They seek to recruit individuals direct from education at all levels - from school leavers to those with PhDs - but employers also source expertise from elsewhere in the sector, from other sectors and from overseas (particularly where specific skills are in short supply in the UK).
66. Apprenticeships and graduate programmes are key means by which employers recruit and train staff for the sector directly from education. Industry and Government organisations have extensive in-house apprentice schemes running to recruit for the technician workforce for nuclear programmes: about 60% of the nuclear workforce population. Approximately 2000 apprentices are training on rolling 3-4 year programmes at any time. The nuclear supply chain has its own apprentice schemes.
67. Turnover in the industry is typically low – with people exiting to retire rather than go to other industries – so retention is less of an issue. However, improving retention remains important to those in industry as they seek to minimise the additional recruitment demands that this implies.
68. Examples of the initiatives in this area include:

Apprenticeships:

- Trailblazer Programme: Employers are working collectively to design new Apprenticeship standards to better meet their needs. A Standard for Apprentices who will become Installation and Maintenance Technicians has been developed. Others are in train.

- Traineeships: A Traineeship to prepare young people to work in the nuclear sector is being developed and implemented via the Nuclear Industrial Partnership (Nuclear IP) with the aim of attracting a more diverse range of young people into the sector.

Graduates:

- Strategic industry-academic partnerships to align educational courses and postgraduate research with the needs of industry. These include partnerships with Amec Foster Wheeler, EDF Energy, the National Nuclear Laboratory, Rolls-Royce and Sellafield Ltd.
- Nuclear Doctoral Training Centres provide a four-year PhD degree that is co-sponsored by the Engineering and Physical Sciences Research Council and industry and coordinated by the University of Manchester and Imperial College. A similar programme exists for nuclear masters degrees.
- nucleargraduates: an industry-wide scheme to increase graduate intake providing a diverse range of opportunities and experience across the whole sector. About 400 graduates are currently employed in the major sector employers, typically progressing through 1 to 2 year in-house educational and skills programmes.
- Sponsorship Programmes - for example Dounreay sponsors young people directly from school to undertake degree level qualifications through North Highland College, supplemented with structured work experience on site.

The Nuclear Industrial Partnership

Magnox Ltd leads the Nuclear Industrial Partnership (Nuclear IP) on behalf of industry. It has been set up to help the nuclear sector to:

- Deliver 'a high performing, high quality' workforce to support the nuclear programme.
- Provide industry with the confidence to invest in a nuclear future by securing a talent pipeline leading to a workforce with capability, capacity and commitment
- Assist the supply chain to develop the skills and expertise required to compete in the UK and global market for contracts

The Nuclear IP falls within the scope of the Government's Employer Ownership of Skills (EOS) policy. This makes employers, as the key customer responsible for determining their skills needs and shaping the training system and interventions to meet those needs.

Magnox Ltd. has accessed £4m of Government funding matched with employer funding of £4m for the project. Some of the key outcomes include:

- Employer-led programmes to attract new people into the sector at all levels including: STEM workshops; Summer Schools; Traineeships; Apprenticeships and a transition programme to re-skill engineers from other sectors.
- Skills development for the supply chain with a focus on SMEs.

Subject Matter Experts:

- The Nuclear IP includes a workstream to accelerate the development of subject matter experts. This will involve extended work placements for 10 post graduate researchers to carry out R&D in a nuclear industry environment and short industry awareness courses for 100 researchers delivered in universities. This activity, while modest in scale is a crucial component in the accelerated development of Tier 3 subject matter experts. The expertise of current specialists was developed through R&D on real nuclear materials in specialised nuclear facilities. Only through working with nuclear materials can an understanding of operational constraints around fuel manufacture, waste management and handling of irradiated materials for example, begin to develop.
- The National Nuclear Laboratory has developed a “Technical Excellence Development Programme” aimed at developing technical leadership skills. Initially an in-house course, this is now being extended to other organisations.



Courtesy of the NDA

Retention:

- NSAN has developed a Competence Framework available to organisations in the sector that enables individuals to identify the competencies and skills that they need to develop to support their progression within the nuclear industry.
69. These programmes, and those of individual employers, recruit thousands to the nuclear industry each year. However, the sector does not yet have a clear picture of how much it will need to expand recruitment by in order to meet the 8,600 per annum target. Accordingly, work is under way to assess the size of the gap between existing recruitment and training programmes and those required to meet the target. This **Census of Skills Supply** is discussed later.
70. Several other innovative activities have been proposed to boost recruitment while this assessment is ongoing. Government and elements of industry are working together to develop a **Cross-Sector Nuclear Career Path**. The aim of the Career Path is to offer a more diverse career in the sector and so make a career in nuclear more attractive. The Career Path will provide new entrants with a series of postings across the sector, allowing them to build a

broad base of skills and better understand the wider sector. Later, the career path will make transitions between different participating organisations easier.

71. Separately, a group of nuclear sector employers, led by Sellafield and the MoD, has submitted an Expression of Interest (EoI) letter to BIS seeking approval to develop a Nuclear Engineering and Science Degree-Level Apprenticeship. The degree apprenticeship will enable graduates to undertake and be responsible for a broad range of engineering, science and technical specialist roles within the civil and defence sectors of the nuclear industry. The aim is to ensure operations, decommissioning, new build and nuclear defence requirements continue to have highly skilled and professionally qualified personnel. The Degree Apprenticeship will provide a balanced approach for work based learning and academic achievement to ensure graduates will have the work ready skills, knowledge, experience and competence required by the industry.

3) PINCH POINTS

72. The Nuclear Workforce Assessment details the future skills demand on a profession by profession basis. Although more work is needed on Skills Supply, this data has enabled industry, government and skills bodies to identify potential future skills shortages in specific professions which may impact substantially on the sector's plans.
73. Particular skills shortfalls during the new nuclear construction phase are likely to include:
- Control and Instrumentation
 - Project and Programme Management
 - Steel fixers
 - Concreters
 - Civil engineering operatives
 - Electrical engineers
 - Scaffolders

Other professions where there is a risk of shortfalls which requires monitoring are:

- Safety Case Specialists
- Commissioning Engineers
- Heavy Electrical Engineers
- Nuclear Chemists
- Health Physicists
- Radiological Protection Advisors

Steel Fixing – Hinkley Point C (HPC)

- Steel fixing is the formation of the steel reinforcing bar that is contained within the concrete structure. There is a UK shortage of steel fixers so meeting the HPC demand will be challenging. An aging workforce and the lack of formal apprenticeship route further compounds the issue.
- Bridgwater College has worked with industry partners, in particular EDF Energy, skills bodies and the National Open College Network to develop a new apprenticeship framework for steel fixing. EDF Energy supplied £1.5mn to create the construction centre. The qualification was developed by Laing O'Rourke. A further £500K investment from the College will equip the college facilities with a series of specialist concrete platforms, replicating live site scenarios for reinforcing bar cage assembly. Teams of 16 apprentices will spend 80% of their time developing the practical skills for this trade which is critical to deliver HPC on time and to budget. The programme, which began recently, will bring over 200 apprentices into the industry annually.



74. There is also of risk of shortages in niche areas, where a small number of Subject Matter Experts are relied upon nationally. These experts cannot be identified by the NWA, which forecasts future demand by profession but not to the level of detail of individual Subject Matter Experts. However the sector is conscious of these constraints and industry, Government and universities are working together to succession plan for these experts. (see discussion of subject matter experts, on page 22). NIRAB is also making recommendations for Government led R&D programmes which would meet these needs.
75. To tackle the potential pinch points, skills bodies, the Government and industry are massively increasing the availability of apprenticeships, qualifications and training in these vocations and professions. Estimates suggest the sector currently has 1700-2000 apprentices. In addition, a range of interventions have been developed to tackle shortfalls in key professions.
76. Separately, 'Nuclearisation' programmes have been developed to efficiently provide workers from non-nuclear professions (e.g. construction workers) with the nuclear awareness necessary to operate safely and to the standards required on a nuclear site.
77. While work in this area to date has been extensive, more effort is required to better map likely future skills pinch points. This will be a focus for the NIC Skills Workstream following the Census of Skills Supply.

4) PROFESSIONAL DEVELOPMENT

78. Professional development is vital to a suitably skilled workforce, trained to established industry standards. In the case of the nuclear sector it is also necessary to support the transition of the workforce as the sector changes in the coming decades.



Courtesy of AREVA

79. Active professional development and secondment programmes exist across the bulk of employers in the nuclear sector. These programmes are driven by the needs of the various industry organisations and regulatory demands.
80. Regulation dictates that Industry and Government train their employees not only at the start of their careers but continuously, to ensure that their workers are SQEP capable. Programmes across engineering, maintenance, decommissioning and operations, some including the use of nuclear simulators, provide this on-going training and assessment of the workforce. Much of this is done in-house.
81. Beyond the regulatory requirements, professional development is provided to the sector through a network of education establishments linked to the sector. These offer programmes ranging from Foundation Degrees to Masters and beyond to ensure the continuing education of the workforce.
82. The NNL is supporting continuous development by making its nuclear facilities available for R&D programmes involving the academic community and international collaborators. The ability to carry out R&D in nuclear facilities has been vital in the development of today's Tier 3 experts as well as many industry leaders and must play a central role in the development of our future experts and leaders. High quality R&D in specialist facilities is also a pre-requisite for regaining international recognition as a top table nuclear nation. While the NNL is engaged in a range of activities, these is limited in scope and of insufficient scale to address the need for Tier 3 expertise in many of the key areas, such as reactor physics, reactor chemistry, fuel expertise, thermal hydraulics and advanced materials. The development opportunities are being supported by:
- Access to active facilities at Sellafield and Springfield and Engineering facility at Workington.
 - The NNL's investment in commissioning of two high activity handling facilities at its Central Laboratory at Sellafield.

- The availability of state of the art equipment funded by EPSRC through the National Nuclear Users Facility.
- Arrangements by which the facility costs for academic access can be funded either by NDA or NNL.
- Funding of the training and supervisory costs for 10 secondments as part of the Nuclear Industrial Partnership programme
- Investment in an internally funded R&D programme encouraging academic and international collaborations and capability development.

83. The Ministry of Defence (both Royal Navy and Civil Service) uses a range of professional development initiatives to sustain its SQEP workforce in government and industry partners, such as the Atomic Weapons Establishment (AWE), BAE Systems, Rolls- Royce and Babcock Marine including:

- Introduction of training postings – intended to build experience for a small number of individuals in key areas and so fast track vulnerable skills development.
- A nuclear graduate mentoring scheme.
- Use of professional community conferences.

In addition, it makes full use of a dedicated internal Nuclear Department of the Defence Academy that works with Defence Nuclear Industries and the Defence Nuclear Safety Regulator to deliver post graduate development across all levels of professional skills.

84. In addition, some sector-wide professional development tools have been developed for use in the sector including:

- The POWERful WOMEN campaign founded by Baroness Verma and Laura Sandys MP which aims to increase the proportion of women in middle and senior management jobs, so addressing the diversity challenge. Among other things, the scheme matches professional women with industry leaders to mentor them.
- The Nuclear Technology Management Professional Development Programme (N-PDP) developed by the University of Manchester in partnership with Amec Foster Wheeler, EDF Energy and the National Nuclear Laboratory, combines postgraduate education and industrial experience for accelerating the development of graduates.
- The Nuclear Skills Passport (NS4P) and integrated Competency Framework – A pair of NSAN initiatives to create common nuclear skills sets. These frameworks help individuals and employers to identify skills training and development needed for career development. The Competence Framework is now being aligned with the similar Competence Framework used in Defence to help identify career pathways across the nuclear sector.

85. Examples of the training currently in place to ensure common industry standards and quality are adhered to consist of:

- Nuclear Industry Training Framework (NITF): A comprehensive industry developed framework of training standards.
- Industry Wide Training Programmes e.g. manufacturing codes and standards awareness programmes.

Promoting Gender Diversity at the ONR through Professional Development

- The Office for Nuclear Regulation (ONR) has been taking action to strengthen and promote its culture of equality and diversity. In addition to a rolling programme of diversity and inclusion training for all staff, ONR is focusing its efforts to ensuring that all female staff have the best opportunity to succeed and has introduced a number of initiatives to support them including:
- Mentoring opportunities with members of the Senior Leadership Team for women managers as a non-directive form of development.
- Training and development for female staff focusing on how they can make a significant leadership and management contribution in the delivery of ONR's strategic intent, mission and values.
- Supporting the work of Women in Nuclear (WiN) UK through representation on the WiN Executive Committee.
- David Caton, HR Director said, "The Senior Leadership Team recognises that the business case for diversity and inclusion goes beyond what is required by legislation. It is about the importance of diversity in recruiting and retaining skills, and creating an open and inclusive workplace culture in which everyone feels valued and respects their colleagues. As a result of our interventions, we have improved female representation in our senior management from 6% to 20%. This is a start and something we are committed to progressing further."

86. These initiatives are helping to reshape the professional development landscape. However, there are gaps in the provision of training for those with A-levels with not degrees whether new entrants or part of the existing workforce. To meet this skills challenge requires:
- New qualifications and a Nuclear Curriculum developed at the higher vocational education level (L4+).
 - Greater capacity to deliver this training, which includes joint investment in new facilities within our colleges, universities and private providers as well as shared use of facilities that already exist.
 - A stronger, formalised relationship between industry and the education system.
 - Greater specialisation within our provider base.
87. The Government intends to establish a new **National College for Nuclear** (NCfN) to address these challenges. Initially, the College's founding partners will be EDF and Sellafield, though it will also develop close links with the Nuclear Department of the MOD.
88. The NCfN will work collaboratively with the wider industry, skills bodies and training providers and will utilise international best practice to develop an industry-wide curriculum. It is envisioned that the NCfN will be designed and incorporated to allow for its expansion in the future as other new build developers and large nuclear companies grow their skills and training activities, facilities and investment. The Government is clear that the NCfN will be genuinely national and of benefit to the entire nuclear sector; it can therefore be expanded and adapted to meet industry needs and industry investment in higher level technical skills all along the supply chain.
89. The NCfN will initially have two hub campuses in Cumbria and the South West and a federated delivery model of the best colleges, universities and training providers operating nationally. These first two locations will be joined in the future by a further hub or hubs as

appropriate, for example there may be a Welsh hub taken forward by Horizon and the Welsh Government in line with the development of the Wylfa Newydd nuclear power station.

90. The NCfN will:

- Secure new powers to award and accredit qualifications and curriculum based on international models of excellence.
- Cut through the complexity of the skills system, bringing together industry, vocational and higher education training needs.
- Supply the missing piece for industry – a direct relationship and industry voice with educational institutions including further education colleges, private training providers and universities.
- Ensure that the best providers are empowered to deliver the new Nuclear Curriculum.

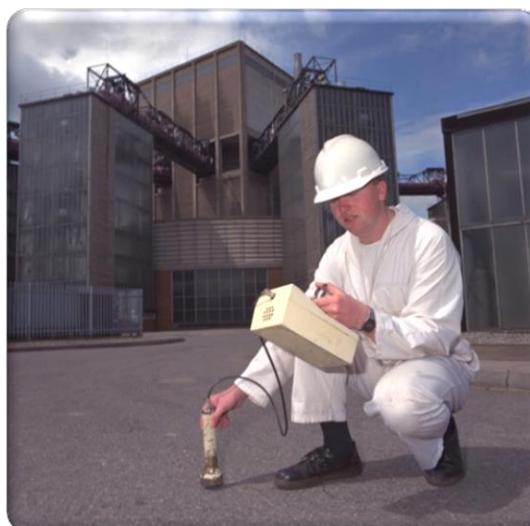
91. Through NSAN, NESAs, and the NIC the industry has developed a strong basis for joint working. The National College will strengthen this work.

5) KNOWLEDGE MANAGEMENT AND TRANSFERABILITY

92. Given the forecast high attrition rate in the sector and need to recruit thousands in the coming years, focusing on making transitions easier for organisations (knowledge management) and individuals (transferability) will be vital.

93. In general, activities around transferability within the sector seek to identify common skills and skill gaps to make it easier for individuals to recognise whether they are suited to a position and what additional training they may need in order to perform in it. Examples of approaches to this problem include:

- Online Learning Portal – [the Nuclear Training Network](#): Provides access to nuclear industry training which supports skills transition and transferability.
- Amec Foster Wheeler KM framework for knowledge transferability which was reviewed recently at an IAEA experts meeting and this will be showcased in a new best practice case study publication IAEA are preparing.
- The Skills Transition Programme "Make the Right Connections" led by Caithness Chamber of Commerce and funded by the NDA and DSRL, provided upskilling and skills broadening opportunities to 700 individuals at Dounreay and within the Dounreay supply chain to enable transition within the nuclear sector, wider supply chain and in setting up their own businesses.



Courtesy of NDA

94. Many organisations in the sector have knowledge management programmes in place to ensure knowledge is captured to be passed onto others as relevant. Examples of these include:
- The development of the Nuclear Decommissioning Authority's Knowledge Hub.
 - The ONR's knowledge management strategy, which has been developed in accordance with IAEA guidance. The ONR has trained staff in knowledge management techniques and, following pilot application in critical areas, is rolling out these approaches across the organisation.
95. A substantial amount of work is on-going within individual organisations and companies to manage the retention and transfer of knowledge to future employees. However, it is desirable that a strategic overview is taken across the sector to ensure the coherence of this work.

A Cross-Government Approach

96. Several Governmental departments and organisations are crucial to the delivery of the UK's nuclear programmes - the Ministry of Defence (including the Royal Navy), the Nuclear Decommissioning Authority (NDA), the National Nuclear Laboratory and the Office for Nuclear Regulation (ONR).
97. In common with the rest of the sector, these organisations will face increasing competition for the nuclear specialists at a time when many are expected to retire. However these challenges are exacerbated for governmental organisations, by the restrictions on hiring practices – in particular the need to recruit UK nationals for some roles, and the limits on civil servant pay.
98. MOD is more constrained by its employment policies than other Governmental organisations and so is taking an active role in the development of cross-Government skills training, recruitment and retention practices for the sector to address these issues.
99. As part of this cooperation, the key Departments across Government (MOD, DECC, BIS, the NDA and ONR) have agreed a programme of work to sustain and enhance public sector skills. This work will:
- Improving skills coherence: Create a common skills framework for jobs in the public sector in both civil and defence areas. This common framework will allow standardised learning pathways for specific roles and make transferring between roles easier by introducing common training requirements.
 - Cross-sector Nuclear Career Path: Government will lead work with industry to develop this career path.
 - Enhance the way that nuclear careers are managed in Defence in particular – improving existing approaches to recruitment and training as well as the professional development opportunities available to people.

This work will be taken forward in partnership with Industry through the Nuclear Industry Council, with the aim of having real and significant benefits from 2016 onwards.

The Way Forward

100. The nuclear sector's human capital is arguably its most valuable resource. Individuals must complete years of training and on the job learning in many cases: tier three experts spend between ten and twenty years to develop their knowledge. This level of investment in training and development is virtually unequalled elsewhere.
101. The UK's long history in the nuclear sector has allowed it to develop a globally recognised nuclear workforce. Yet as parts of this workforce age, it places increasing importance on retaining nuclear experts and creating a sufficient pipeline to develop the nuclear skills needed for the future. This, coupled with the expansion of the sector and need to diversify the workforce, imply a substantial challenge.
102. In the two years since the publication of the Nuclear Industrial Sector strategy, the sector made good progress on skills. Building on individual organisation's comprehensive skills programmes, the NIC's Skills Workstream has developed a cross-sector approach to the challenges. It has elaborated a strategy, established a series of initiatives to address it and created a sector-wide process to acquire high-quality data on sector's future workforce demands.
103. Yet as the sector's understanding of the skills challenges has improved, there has been growing recognition of its scale and of the need to do more. Addressing this, a number of new initiatives have been initiated. This paper has already set-out industry plans to establish a National College for Nuclear that will develop an industry wide nuclear curriculum. Furthermore, changes to NSAN may help to amplify and focus industry's voice on UK Nuclear Skills and will seek to ensure that it champions the highest industry skills standards while reflecting all parts of the sector.
104. In addition creating a Cross-Sector Nuclear Career Path should increase the numbers of people committing to a nuclear career and enhance their capabilities. However, the sector plans several further elements to address the challenge.
105. The NIC Skills Workstream is seeking to better quantify the likely future skills gap in individual professions. The data from the Nuclear Workforce Assessment provided figures for future skills demand for the workforce as a whole. It also identified professions in which there is likely to be a high risk of a future shortfall in skills. However, more detailed interrogation of the data is required to assess the demand requirements on a profession by profession basis and to initiate timely interventions.
106. In a linked piece of work, the Skills Workstream has begun a '**Census of Skills Supply**'. The Census is vital to future work on skills. It will provide a correspondingly detailed study of the various recruitment and skills training initiatives which are in place. This will allow the sector to better forecast the inflow of skills into individual professions in the future in order to match against expected demand.
107. Together these two pieces of work will allow the sector to create a detailed and accurate picture of the likely future skills gaps. This is a crucial precursor to taking further and better informed action – though the NIC and with support from partners – to tackle shortfalls in various professions.
108. Separately, the Government intends to better **link those working on skills at the national level with their regional counterparts**. This will ensure that any assessment of skills supply accurately reflects activities at the local level. It should also help to establish regional centres of skills excellence in specific nuclear fields and prevent duplication of skills activities across the country. Many regions, notably including Cumbria, the South-West of England and North-West Wales have skills programmes intended to supply major nuclear projects with a local workforce and thereby maximise the opportunities for the region from the project.

109. The NIC is already changing the way in which it approaches the skills agenda, but there is now a need to consider a step change in activity. Industry and Government should assess whether to accelerate their coordinated action on skills and, if so, set out a more detailed plan of action to address the skills challenges. This plan could, for example, consider what further priority actions are required on skills and set timelines and milestones for them, look at which professions/skills need are more valuably filled from within the UK and which needs could be filled with foreign experts, look in more detail at how to create a pipeline of Subject Matter Experts and consider how to evaluate progress against the sector's goals.
110. It will be for the NIC and Skills workstream in conjunction with Government to take forward a **Strategic Review of Cross-Sector Activity on Nuclear Skills** and decide whether more detailed sector-wide skills planning is required. As a first step, Government will sponsor a roundtable in autumn 2015 to consider how best to build on the existing activity and create the step change needed.
111. Creating an effective and regular evaluation process will be essential. Assessing progress, foreseeing future skills issues and putting in place measures early enough to address them will be vital to the sector's success.
112. Delivering a nuclear workforce who, in line with the sector's skills targets, is sufficiently large and globally recognised for its expertise and diversity will be challenging. Yet all those in the sector should take an interest in doing so successfully. We start with strong foundations – the UK's nuclear heritage is globally recognised with a highly skilled and capable workforce developed over many decades of experience. But looking ahead, only with the right skills base, will the UK be able to realise the opportunities both nationally and internationally of the nuclear renaissance, and deliver its complex nuclear programme over the next decade.

Activity	Timing
<p>Strategic Review of Cross-Sector Activity on Nuclear Skills: NIC to oversee the review, to be carried out by the Skills Workstream with support from Government.</p> <p>The review should evaluate the sufficiency of whole sector skills activities to date and consider whether additional activities, or even a step change in collaborative activity, are required</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> Government (DECC) to drive forward these discussions. These will be initiated with a high-level skills discussion in the autumn. 	Autumn 2015
<p>Census of Skills Supply: The Skills Workstream is carrying out the Census at present. It will provide vital evidence on whether the existing skills activities are sufficient to meet the growing demand for skills or whether further activities are required. It will also help to accurately assess which professions will face future skills shortages.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> Complete Census with full data available. 	End 2015
<p>Stronger National/Local Links on Skills Government (DECC and BIS) will work to foster stronger links between local and national leads on skills. This will improve coherence between regional and national level activities on skills and help to prevent duplication.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> Government (DECC and BIS) to develop and implement a model to facilitate better local and national links in conjunction with key partners. 	by May 2015

<p>Cross-Sector Nuclear Career Path Government (MOD) will lead work to create a Cross-Sector Nuclear Career Path. The aim will be to better attract individuals to a career in nuclear and to allow them to gain broader experience in the nuclear sector and so develop.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> • Government (MOD) to identify career paths common to public sector entities and the opportunities for people to flow between the entities. • MOD to identify industry partners to join the scheme and agree how this will work. 	<p>Summer 2015</p> <p>Autumn 2015</p>
<p>National College for Nuclear (NCfN) Government (BIS) will lead work on the NCfN in partnership with industry – initially EDF and Sellafield. The NCfN will develop new qualifications and a Nuclear Curriculum at the higher vocational education level (L4+). Create greater capacity to deliver this training, including through joint investment in new facilities. And strengthen the relationship between industry and the education system.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> • BIS and the industry proposal to be finalised. • Locations for the initial campuses to be decided and capital build to commence. • Curriculum development and industry engagement to start. 	<p>March 2015</p> <p>Construction completed September 2017</p> <p>Curriculum development to begin April 2015</p>
<p>Nuclear Degree Level Apprenticeship BIS will take forward work on the Degree Apprenticeship with support from MOD and industry. The Apprenticeship will provide a balanced approach for work based learning and academic achievement to ensure graduates will have the work ready skills, knowledge, experience and competence required by the industry.</p> <p><i>Action:</i></p> <ul style="list-style-type: none"> • Consortium of civil and defence nuclear employers to work with universities to develop a new degree-level nuclear engineering apprenticeship. 	<p>First meeting March 2015</p>

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