MANY SKILLS ONE VISION

ENERGY AND UTILITIES WORKFORCE RENEWAL AND SKILLS STRATEGY: 2020

ENERGY & UTILITIES SKILLS PARTNERSHIP

SUSTAINABLE TALENT FOR ESSENTIAL SERVICES AND SUSTAINABLE INFRASTRUCTURE

CONTENTS

FOREWORD BY CHAIR OF ENERGY & UTILITIES SKILLS PARTNERSHIP

Our sector – widely referred to as the energy and utilities sector – touches the lives of over 65 million customers and citizens in the UK each and every day, providing the essential services that enable nations, regions and communities to go about their business.

In addition to that 24-hour-a-day service commitment, the gas, water, wastewater, electricity and waste management industries also form the largest single contributor towards the infrastructure ambitions of all four UK Governments.

Over half of the National Infrastructure Delivery Plan (NIDP) is attributed solely to our sector, and without the products of those investments – power, light, fresh drinking water, safe sanitation, waste removal, environmental protection and recycling – the remainder of that plan is simply unable to be delivered.

We are proud of the pivotal role we play for our customers and society and recognise our place in building the future prosperity for the UK.

To deliver our responsibilities safely and effectively at a sustainable cost, takes an exceptionally skilled and substantial workforce, the sustainability of which is under pressure. We face an ageing workforce, intense competition for many of our core skills, growing complexity within roles, a rapidly changing technology environment, a need for more diversity of skills and the people who perform them, rising labour costs, and ongoing difficulties in attracting sufficient new and young people.

20%
of the workforce will retire within ten years

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The full picture will become evident as you progress further through this document, but in summary, 20% of this sector's workforce will retire within ten years, requiring around 221,000 new recruits to be secured during the same period.

As such an important enabler of the economy and society, we recognise there is a need for collective action, and we must all face up to this strategic workforce renewal and skills challenge. I do mean all: policy makers, regulators, regulated businesses and the vital delivery partners and suppliers. Individual businesses cannot be left to manage the risks of sector resilience alone.

I am delighted to chair the partnership of industry leaders from across the UK that has decided to take action, to become the catalyst for change. This is the inaugural energy and utilities workforce and skills strategy, setting out for the first time, in one place, the reality of the challenges faced, and the ambitions we all share in moving towards achieving a more sustainable future.

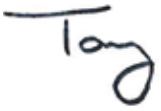
This strategy seeks to start the discussion, and it will continue to evolve as we work with our key stakeholders, interest groups and other sectors to deliver an extensive programme of change and cooperation. Our partnership with HM Treasury, central and devolved Government, and our regulators is a key part of that work and I thank them for all of the support we have received to date. It enables us to tackle common and urgent issues, where the benefits of collaborative action are greater than any of us could achieve individually.

We are making change happen already in the relatively short time that we have been working together as a sector. Energy and utilities has become the first industry anywhere to graduate apprentices, through the English Trailblazer system, leading the way in terms of apprenticeship creation, developing employer-led standards and building high-quality end-point assessment. We will now replicate that success to meet the needs of our partners across the devolved nations.

people are employed in the energy and utilities sector across the UK

We have new inclusive approaches to attracting talent, bringing thousands of civilians and ex-military personnel into fresh contact with sector employers. We are looking to offer a vast spectrum of rewarding careers – careers that genuinely and directly invest back into society, the environment and the economy.

Given the initiatives that seek to build on our commitment to rigorous health and safety, retain the talent we have attracted, bring new investment to skills development, promote the easier movement of accredited workers through 'skills passports', increase diversity and improve resilience. I believe this partnership has the potential to make a tangible difference to the future of this pivotal sector, and make a positive contribution to people's lives.



Dr Tony Cocker

Chair of Energy & Utilities Skills Partnership

EXECUTIVE SUMMARY

Our sector's one vision is: "Through our partnership, we will ensure a safe, skilled and sustainable workforce provides the essential services that our customers seek and meets the UK's needs from the energy and utilities infrastructure."

Introduction

The Energy & Utilities Skills Partnership (the Skills Partnership) has built and published the first strategic workforce and skills strategy of its kind for the energy and utilities sector – providing a framework for delivering the National Infrastructure Delivery Plan (NIDP), the long-term sectoral commitments set out by governments and regulators and the strategic plans of the major companies within this partnership. The Skills Partnership has emerged from the former Energy & Efficiency Industrial Partnership (EEIP) and builds on the work that the EEIP did between 2014 and 2016 (the EEIP will be referred to as the Skills Partnership within this document).

Together, we are demonstrating leadership in workforce renewal and skills enhancement, combining the views of employers from across the four nations on how we create an optimal safe operating environment, and secure the right people, with the right skills and behaviours, in the right place, at the right time, at an affordable cost. We have set out the evidence for those views, including the pressure points locally and regionally, and the tensions that will exist as other sectors also find themselves competing for talent to deliver their critical investment plans.

Our strategies, as presented in this document will help accelerate our work with governments, regulators and relevant audiences across the four nations, encouraging joint action, and call for explicit reference to workforce sustainability in the main policy, resilience and regulatory strategies. Failure to secure the skilled workforce required to deliver such infrastructure projects could lead to higher project costs, delays, reduced quality, reliance on overseas skills, loss of intellectual property, stifled innovation and damage to the UK economy and its global competitiveness.[1] The achievement of success requires us all to work and act as one. This document begins the discussion, through providing a strategy framework that seeks to secure successful skills provision to 2020, and will continue to evolve as part of an extensive programme of change and cooperation.

The Skills Challenge Today

The energy and utilities sector provides essential services every day to 65 million consumers and businesses across the four nations. It is also critical to the UK economy. Collectively, this sector is the largest single contributor to the NIDP, and plays an essential role in narrowing the productivity gap between the UK and our international competitors.

We start from a position that is much lower than we would have wished for and one that, without concerted action, is unlikely to remain sustainable.

In the face of an increasingly competitive talent environment, the energy and utilities sector predicts that 221,000 vacancies will need to be filled during the next decade – brought about through 100,000 existing employees that are set to retire and 90,000 people who will leave to find new roles.

While the skills challenge is present to some degree across the whole UK sector and economy, with energy and utilities companies reporting high demand for different and often higher-level skills to keep up with the rapidly evolving needs of the sector, there are particular local / regional pressures.

85%

of hard-to-fill vacancies are challenging because of skills issues[2]

1 Atkins (2015) 'The Skills Deficit: Consequences & Opportunities for UK Infrastructure'.

2 UKCES (2015), UK Employer Skills Survey

For example, UKCES research indicates that skills shortages are greatest in Northern Ireland, followed by Yorkshire and the Humber, the East of England and the East Midlands.

The 2015 Employer Skills Survey reported that 36% of hard-to-fill vacancies in the UK energy and utilities sector were driven by a lack of proficient skills – well above the 23% national average and notably higher than any other sector. This is compounded by the skills replacement challenge and

of employers report challenges with hard-to-fill vacancies

is an increasing trend, therefore raising serious concerns regarding the labour market's ability to supply the skilled workforce required to deliver the bulk of the NIDP projects over the coming years.

Recruiting to meet our evolving skills needs has not been easy. While some individual companies either have high profiles and / or find local recruitment achievable, the collective sector has low visibility, often failing to explain the vital nature of the work it does for society and struggling to attract those school or college leavers. Around 1% of higher education leavers choose to enter the UK energy and utilities sector, with fewer than 5% of engineering graduates employed within it, compared to the retail sector which attracts twice as many science, technology, engineering and maths (STEM) graduates.

We must attract those with key STEM expertise and exploit the transferable skills that exist across the current and future UK workforce. The need for STEM-linked specialists extends beyond engineers to encompass IT specialists (including, as a priority, cyber security and 'big data' professionals) across the sector and high-end scientists (physicists, biologists and chemists), especially in water and waste.

The lack of diversity in the energy and utilities workforce is also notable and while progress has been made, the sector still has lower than national average representation in key gender and ethnicity groups. We need to be a more inclusive sector, or we will continue to limit our talent pool.

The Impact of Future Technologies

Our sector offers stimulating, diverse and fulfilling careers, especially as we embrace fast-changing technologies, new market needs, the need to maintain and improve our health and safety track record and the customer-centric nature of our market.

All of our sector footprint faces rapid change where 'Business as usual' is not an option.

In the energy industries, the asset base is becoming ever more decentralised and remotely managed with a wide range of technological solutions currently under development which could revolutionise how energy is supplied and demanded, including smart grids, power storage, electric vehicles, robotics and automation, micro-grids and third-generation biofuels.

The waste management industry is fast becoming a highly technology- and science-based operation. From increasing the efficacy and efficiency of separating and sorting techniques to producing energy using biological and chemical processes, the industry is fast moving away from the 'collect and dump' industry of the past. Highly sophisticated biological technologies are also being developed in the energy arena.

The water industry is also adapting for a new future. New technologies, processes, partnership working and a deeper understanding of how laws and regulations are formulated and enacted will require new skills and provide new opportunities, which will require new skill sets not previously seen in the industry. Technologies that are high on the agenda, include nanotechnology in water filtration, membrane chemistry, modular hybrid activated sludge digesters, smart monitoring, seawater desalination and artificial intelligence and autonomous systems.

Furthermore, the broader issues of climate change and resource resilience and cyber security (protecting both operational and customer data) are fast becoming priorities. This impacts the demand on skilled labour in a broad range of areas including: engineering, customer service and stakeholder engagement, telecommunications, IT / technology with digitisation and data analytics, business and commercial fields and chemistry, biology, physics, geography and hydraulics. Since the number of skills needed now and in the future is vast, a key aspect of this Energy and Utilities Workforce Renewal and Skills Strategy will be to monitor these developments and target our workforce – planning activities appropriately – including focusing on those job roles and skill sets that will be required in the future and then doing more to communicate these opportunities.

Strategic Priorities

This strategy outlines a wide range of collaborations that will be undertaken to meet the workforce renewal demands through to 2020–21. There are three central themes.

Priority 1 Sector attractiveness and recruitment – to increase our future talent pool

Our objective is to broaden the talent pool through demonstrating the attractiveness of our sector, inspiring and attracting new talent in a highly competitive recruitment environment.

As a sector we will:

- Create and communicate a compelling sector value proposition, in order to be attractive and credible to our current and future workforce
- Take an inclusive approach, ensuring our sector can appeal to all communities, abilities, generations and genders, including extending opportunities to hard-to-reach talent pools in order to attract and retain diverse talent
- Work with schools and colleges to inspire and attract more young people, improving retention rates and making the transition to employment as easy as possible
- Implement innovative new approaches to talent retention. This will include ensuring our best talent does not flow to other sectors, managing the impact on the workforce from cyclical price review investment and working smarter to keep those skilled candidates who apply for roles, but are unsuccessful on that occasion

Priority 2 Maximising investment in skills – investment made by asset owners and their supply chain

We will maximise the sector's investment in skills, securing commitment for further investment in skills from asset owners and their vital delivery partners, and building a sustainable pipeline of apprenticeships. We will ensure that the people who are recruited can acquire the required skills, proficiencies and behaviours quickly and effectively and that existing employees are motivated by opportunities for upskilling and progression.

As a sector we will:

- Develop and provide more accessible and effective entry routes to employment, including placements, traineeships and apprenticeships
- Build high-quality apprenticeships, in full recognition of the developing approaches of Government in Wales, Northern Ireland, Scotland and England
- Derive maximum value from the new UK-wide apprenticeship levy, helping to develop sustainable skills investment approaches that can operate efficiently across the four nations
- Invest in retraining, upskilling and retention, working towards an increasingly professionalised workforce
- Encourage supply chain investment in skills through procurement and across the vital supply chain delivery partners

Priority 3 Targeted action – to address anticipated skill gaps and shortages

We will take targeted action to tackle the challenges and issues already recognised and prioritised by our Council of Energy and Utilities Chief Executives. These include:

- Collectively improving longer-term workforce planning and intelligence, to better predict and address future workforce needs
- Enabling workforce mobility and easier skills transfer, including sector-wide mobility and skills accords
- Providing consistent quality of training, more demanding and evolving standards, and robust industry assessment that is trusted and led by sector employers
- Continuing to attract non-UK-based skilled workers and securing workforce sustainability, as we move towards the planned exit from the European Union in 2019

Engaging in the discussion

The 2017 Industrial Strategy consultations published by central and devolved government start a vital conversation between policy makers, industry and wider stakeholders. Progressed in genuine partnership, they can help to create the supportive workforce and skills policy environment that can enable the energy and utility sector to fulfil its potential for the economy and society. Recognition of skills as a critical economic driver is a very welcome first step in the process. We will work closely with governments across the UK to help inform their final strategies and recognise the significant contribution our workforce can make to increased growth and productivity.

A Platform for Future Work

A great deal of good work has already been done across the four UK nations, and we are building on this. This strategy includes a selection of employer case studies along with sector-wide initiatives led by Energy & Utility Skills.

These include the multi-company pilot initiative to generate youth employment opportunities in the North West, led by United Utilities; the Talent Source Network that brings together employers, training and education organisations, and thousands of people who are looking for work or their next career; a new Skills Accord, launched to drive skills investment into utilities procurement and directly address longstanding technical skills deficiencies; and the employer-led Energy & Utilities Independent Assessment Service (EUIAS), which ensures high training standards and consistent delivery across the sector.

Future Actions and Review

The challenge facing us is significant. The case for immediate, targeted and collaborative action is compelling. We must increase the volume of people joining the sector and compete effectively with adjacent industries to win and retain new talent to ensure we can deliver our commitments in the NIDP. We have to address skill shortages, maintain workforce affordability and optimise productivity.

The inability to supply new talent in the energy and utilities sector could have broader economic implications as it is one of the most productive in the UK economy. In 2014, GVA in the electricity and gas industries was £24.6bn; in water supply, sewage and waste management it was £16.9bn, where, including its supply chain contributions, the sector generated a total of £83bn or 5% of gross domestic product (GDP).[3] Any decline in profitability in our sector may have a disproportionate impact on national GDP and productivity performance.

The benefits of this strategy will only be achieved with the support of UK Government, policy makers, regulators and key stakeholders; we can't do it on our own. This is the first iteration of the strategic workforce renewal programme and we must ensure that the sector takes action now, if it is to continue to deliver at the highest levels and make best use of the thousands of new jobs and opportunities that will emerge.

This strategy will enable the delivery of some tangible changes for the sector. We are clear in our plan, and look forward to engaging widely as we turn this vision in to reality.

3 ONS (2015), 'Regional Growth Value Added (Income Approach): 1997–2014'.

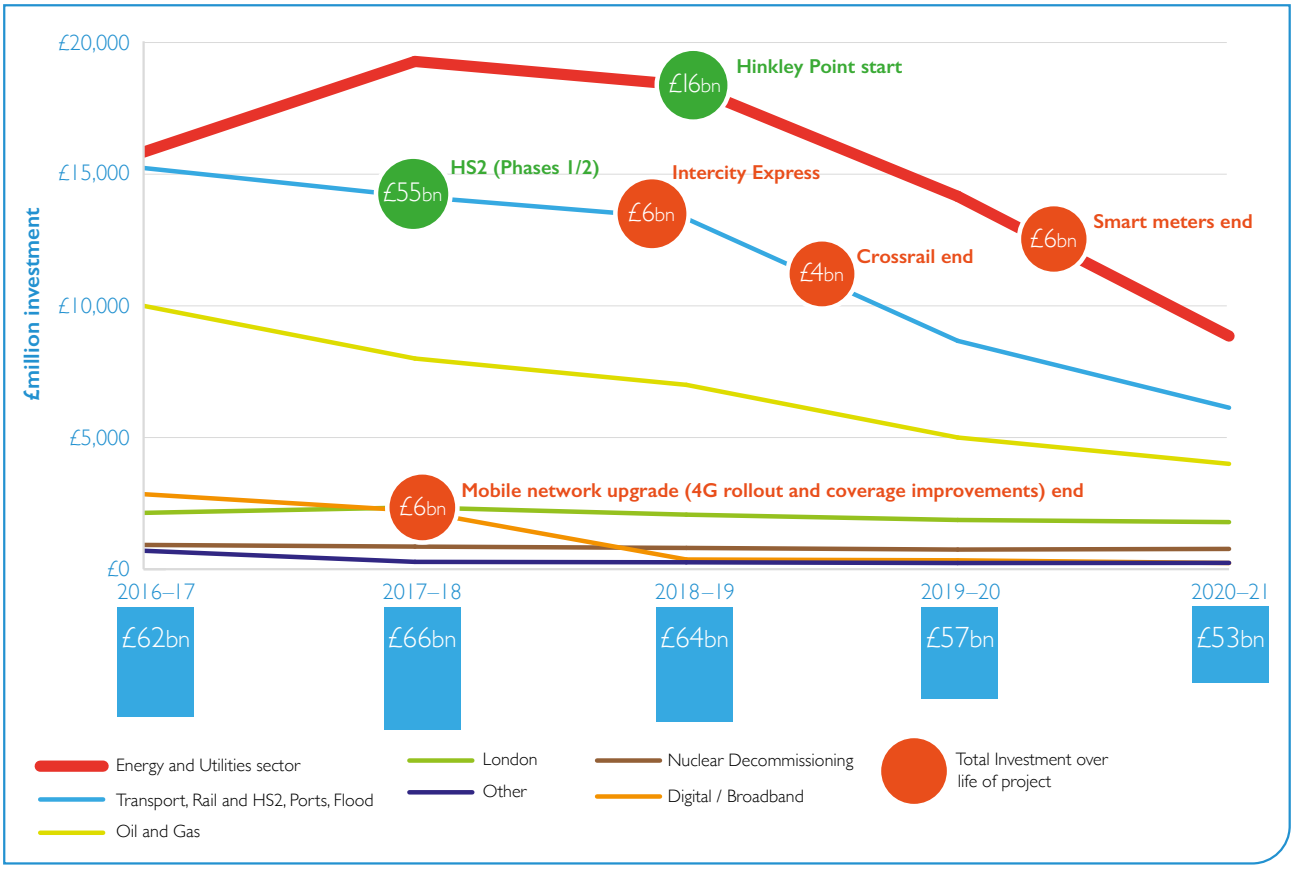


Figure 1: National Infrastructure Pipeline investment for selected sectors / projects (2016–17 to 2020–21) National Infrastructure Pipeline, Infrastructure and Projects Authority, Autumn 2016.

1 AN ECONOMIC PERSPECTIVE ON THE FUTURE NEEDS OF THE SECTOR

Oxera is delighted to support the development of this skills strategy for the energy and utilities sector, which we see as critical to the long-term sustainability of the sector. This short introduction provides some insights on how current developments affecting the sector will shape future workforce needs. Our points are based on our knowledge and expertise, gained through advising governments, regulators, and companies on economic issues across this and many other sectors both in the UK and worldwide for more than three decades.

Overview

The age of infrastructure is upon us – UK Government appetite for direct spending on infrastructure and for policies encouraging private sector infrastructure investment is almost unprecedented. Between 2010–11 and 2014–15, average infrastructure investment was around £60bn per year and is set to remain at a similar level over the next five years.[1]

£60bn per year
of infrastructure spending is forecast to **2021**

Momentum has been building from a number of sources:

- the UK Government expects better infrastructure to increase productivity, which drives a preference for capital expenditure over resource (operating) expenditure by the public sector
- record low interest rates make investment cheaper
- private sector investment funds are looking to finance stable assets that pay back in line with their long-term liabilities

This momentum is complemented by the stable regulatory regimes for major infrastructure sectors such as energy and utilities, which make these industries an attractive proposition for private investors. But while money is clearly a necessary ingredient to maintain and enhance the stock of infrastructure, it is not the only factor – people, and the skills those people have, are the key to turning cash into energy, clean water and a better environment.

> "People, and the skills those people have, are the key to turning cash into energy, clean water and a better environment.

The infrastructure push is clearly welcome, but thought needs to be given to delivery. A 'lumpy' profile of investment may be sub-optimal from a labour force perspective, and may lead to a reliance on access to international labour markets to fulfil short- and medium-term spikes in activity. In contrast, stable long-term planning allows for long-term investment in skills, which will enable the UK not only to serve its own infrastructure needs, but also export its expertise around the world. It will also make the UK more resilient and self-sufficient in a post-Brexit world.

> "It is no longer enough to think about skills at a sector level – the skills employers need are now sought after across the economy.

Furthermore, it is no longer enough to think only about skills at a sector level: advancements in technology, use of big data and an increasing focus on customer needs mean that the skills employers need are now sought after across the economy.

Traditional sector boundaries are becoming increasingly blurred as the world moves towards a more circular economy – one where waste resources are used as inputs into a range of other processes, including recycling, manufacturing and generation of energy. Further, increasingly, businesses in this industry span across a number of sub-sectors, for example, waste management companies are increasingly diversifying into energy generation, leading to demand for new and more multi-disciplined skill sets in the workforce. Such a 'closed loop' system has the potential to generate up to £29bn of additional GDP and create tens of thousands of new jobs.[2]

1 House of Commons Library (2016), 'Briefing paper Number 06594. Infrastructure Policy', 19 May, p. 18; Infrastructure and Projects Authority (2016), 'National Infrastructure Pipeline Spreadsheet: Spring 2016 Update', 15 April.

2 Imperial College London / Veolia (2016), 'The circular revolution'.

Below, we consider how the UK's investment environment in general, and key regulatory and policy decisions more specifically, are likely to shape the future need for a skilled workforce in the energy and utilities sector.

Investment Environment

Following the UK's recent decision to leave the EU, one of the key priorities on the Government's agenda has become improving productivity and encouraging innovation in order to drive national economic growth. In view of this new challenge, the Prime Minister has abandoned the target of achieving a budget surplus by the end of this parliament.

But government spending can only do so much. History shows that stimulating private investment is critical to delivering economic growth, and well-targeted infrastructure projects are particularly attractive given their wider economic impact.

The Government's ambition is clear. The National Infrastructure Pipeline currently plans for both the public and private sectors to finance and deliver projects of £301bn in total spend over the 2016–17 to 2020–21 period. 56% of this investment will hinge on projects in the energy, water and waste management sectors.[3]

56% of the investment forecast in the National Infrastructure Pipeline will be delivered by the energy and utilities sector

Recognising this, the UK National Infrastructure Commission (NIC) – established in 2015 to provide expert advice to the Government on infrastructure challenges in the UK – recently published a Smart Power report to help optimise energy infrastructure investments out to 2030 so that they deliver required economic, social and environmental goals. It recommended that:[4]

- government should pursue additional interconnectors with other European countries where the benefits are most significant;[5]
- the UK should become a world leader in electricity storage systems;[6]
- the UK should make full use of demand flexibility by improving regulation, informing the public of its benefits and piloting business models.[7]

For industry, the challenge is clear – how to provide a sufficiently large, and suitably skilled workforce to meet the Government's ambition across the energy and utilities sectors and deliver these large-scale infrastructure developments?

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While the investment challenge is significant, there should be a healthy supply of willing investors. In particular, the system of independent economic regulation applied to the UK energy and utilities sectors – now almost 30 years old – has shown itself to be attractive to long-term investors seeking predictable returns matching their investment horizons. More generally, the energy and utilities sectors remain in demand – as necessity goods, they are less affected by economic slowdowns than other sectors.

Current debt market conditions are also conducive to investment. Indeed, historically low interest rates and the traditionally strong credit ratings of regulated utilities have combined to give companies access to unusually cheap debt.

Nevertheless, while natural monopolies are largely protected from the current uncertainty created by Brexit, its ultimate impact will depend on the exact deal achieved by the UK. There are a number of ways in which companies could be affected.

- First, the potential labour market impact could be felt throughout the economy – for example, restrictions on migration might lead to increased demand from the UK labour market (at a time of already record employment), potentially leading to increased wages, loss of available skills and inability to address skill scarcity quickly. This would particularly affect the low-skilled aspect of the waste management workforce, which currently accounts for around 134,000 jobs across the UK.[8]
- Second, international investors might face higher currency exchange risks and therefore require higher returns to invest in the UK.

3 Infrastructure and Projects Authority (2016), 'National Infrastructure Pipeline Spreadsheet: Spring 2016 Update', 15 April.
4 National Infrastructure Commission (2016), 'A Smart Power Revolution could save consumers £8 billion a year - Adonis', News story, 4 March, https://www.gov.uk/government/news/a-smart-power-revolution-could-save-consumers-8-billion-a-year-adonis.
5 This will decrease the costs of the system (therefore, decreasing the bills) and help to balance the system.
6 Not through subsidies, but by ensuring that better regulation creates a level playing field between generation and storage.
7 For example, a new generation of hi-tech systems would mean that consumers can save money and cut emissions without inconvenience.
8 Based on information from Energy & Utility Skills.

- Finally, infrastructure companies in the UK have received considerable funding from the European Investment Bank in recent years (specifically, around €29bn over 2011–15).[9] Were funding to the UK to be withdrawn post-Brexit, infrastructure projects would have to rely on alternative sources of funding.

> "The impact of Brexit on investment in the UK remains uncertain but, depending on the details of the deal, it could be material – either reducing the number of projects going ahead or creating pressures on companies to use the existing workforce more efficiently.

In short, the impact of Brexit on the energy and utilities sector in the UK remains uncertain but, depending on the details of the deal, it could be material – reducing the number of projects going ahead, negatively affecting project delivery costs and quality, or creating pressures on companies to use the existing workforce more efficiently.

Regulatory and Policy Environment

Innovation – a need for skills?

The recent move to smart meters in the energy sector will dramatically alter the skills requirement – potentially requiring over 12,000 additional workers, including 10,000 meter installers.[10] Other 'smart' technology-related skills will be increasingly demanded across most levels of the workforce, including telecommunications, software architecture and cyber security competencies. In addition, as energy suppliers gain access to large amounts of valuable customer data for the first time, there will inevitably be a need for big data skills in the industry. Analysing customer behavioural patterns could help companies to create new products and find further potential for energy efficiency. This means that the energy and utilities sector will need to attract individuals with the required skills and knowledge from other sectors.

Smart meter data will also help distribution network operators with their future additional function as system operators. The gradual shift from larger to smaller energy producers in the UK market means that the distribution networks will have to manage the energy flows that come from a larger number of sources into the system.

As part of its upstream market reforms, Ofwat is also encouraging companies to take the opportunity to engage more actively in the bio-resources treatment market, which could potentially be worth up to £780m. The decision to increase operations in this market would require investment and, importantly, skills and knowledge in this area. If the majority of the 18 water companies in the industry decide to take on this business opportunity, there will be a large shift in demand for skills in this area.

Innovation, especially in the water sector, is also likely to be driven by the increasing importance of the resilience agenda, with Ofwat now having a new statutory duty in relation to securing the long-term resilience of companies' systems and services to consumers. Recent experience has shown how disruptive events such as floods can pose a threat to water company operations, and Ofwat is looking to give companies more flexibility in how they can manage short-term shocks and meet longer-term challenges. This will need to be backed by evidence that investing in resilience delivers economic benefits exceeding the costs. Such evidence has been developed in other sectors including flood defence in transport, which water sector can learn from to make its case.

In 2014 about 12% of the UK's total renewable energy was generated from waste. New methods of treating waste are driving the change towards a more circular economy – turning the waste products into useful inputs such as energy. Even non-recyclable materials are now being used to provide a reliable and affordable source of energy for households. These developments are creating new green jobs across the economy at a higher skill level[11] and open up the associated labour market, enabling cross-sector movement of skills, ideas and innovation.

Regulators – customer engagement as a new norm?

In recent years, the regulators of energy and utilities markets have shifted their attention to consumer interests as the key to good regulation. The increasing focus on customer engagement means that the need for specialised labour in this area will continue to grow over the next few years.

> "The increasing focus on customer engagement means that the need for specialised labour in energy and utilities firms will grow over the next few years.

In water, Ofwat now expects companies to conduct high-quality consumer research to inform their business proposals. In addition, the opening of the retail market in the sector is likely to contribute further to the need for individuals skilled in effective customer interactions.[12]

9 European Investment Bank, 'The EIB in the United Kingdom', Website section, http://www.eib.org/projects/regions/european-union/united-kingdom/index.htm.

10 Estimate derived by Energy & Utility Skills using DECC supplier roll-out profile data, March 2016 (unpublished).

11 Environmental Services Association (2016), 'Delivering Sustainable Growth', May.

12 While opening of the non-household market is expected in 2017, it is possible that passing the necessary legislation for the household market could be delayed due to Brexit negotiations being at the top of civil servants' agenda at the moment.

Similarly, in the energy sector, Ofgem regularly uses consumer research to ensure that its decisions are informed by evidence and views from energy consumers – most recently focusing on addressing customer disengagement. Even where companies are not selling their services directly to end-consumers, awareness of the need for consumer research is growing. For example, the electricity industry code panels (comprising generators and suppliers) are now being required to assess the impact of code changes on consumers.[13]

EU directives – still relevant in the post-Brexit world?
Historically, a number of EU directives have stimulated shifts in labour skills demand through introduction of EU-wide requirements, including a number of significant changes in the energy and utilities sector.

For example, the government is currently addressing the need to replace most of the ageing nuclear and coal plants' capacity through development of renewable energy sources, in line with the EU 20-20-20 targets[14] and the 2030 Climate Framework. Brexit is unlikely to weaken the decarbonisation agenda, as the UK's specific commitment to carbon emission issues is generally much stronger than in the wider EU. The main change is likely to be the way in which the decarbonisation agenda is delivered, with a possible shift from renewables to alternative solutions.

Historically, in the water sector, investment to address environment concerns has been driven substantially by EU environmental policy. For example, the EU's Urban Waste Water Treatment Directive aims to protect the environment from the adverse effects of waste water discharges from cities and certain industrial sectors,[15] which resulted in Thames Water having to build the Thames Tideway Tunnel. As the UK remains committed to addressing environmental issues, it is likely that a lot of its legislative requirements will remain in line with the EU's policies.

The EU's Waste Framework Directive and imposition of the landfill tax in the UK in 1996 contributed to the dramatic growth of recycling levels, i.e. from only 12% in 2001 to 44% in 2014. The current EU target is an ambitious one – 50% by 2020 and 70% by 2030.[16]

Depending on the details of the Brexit deal, the UK is likely to continue to pursue the increase in recycling levels, as the main driver of this trend, the landfill tax, is embedded in the UK's own legislation.

Apprenticeship levy – a burden or an opportunity?
From April 2017, all large firms in the UK will have to contribute financially to apprenticeship training, via the apprenticeship levy. The funding collected by the Treasury through the levy will then be used to incentivise businesses to take on apprentices, by allowing them to reclaim their costs.

It is currently unclear how economic regulators will treat the levy. However, it seems unlikely that regulators would allow this to be passed on to customers to the same extent as with other business costs, given that it can be offset by government rebates if the company chooses to employ apprentices. If the cost is not allowed by the regulators (i.e. it is a genuine cost to industry), the incentive on companies would be to increase the number of apprentices to employ (including, for example, in non-technical areas such as project management or accountancy) as companies seek to earn a return on this expenditure.

However, there are many uncertainties regarding the full impact of the levy on employers in the sector, not least the capacity of employers to take on increased numbers of apprentices and the potential displacement effect on other entry routes (including graduate entry programmes). Therefore the final impact on the composition of the workforce is currently uncertain and is likely to depend on how the levy is implemented in practice.

It is clear, however, that the government is firmly behind the growth of apprenticeships and that any public funding will be linked to their uptake. With the possibility that the ability to respond to labour pressures will reduce post-Brexit, there will be greater imperative for the sector to 'grow' its own future skills. In addition, the sector will need to develop Apprenticeship Standards to have access to the public funding, while training providers will need to enhance their capacity to respond to the changing needs of the sector.

Conclusions

The energy, water and waste sectors are facing a period of change, and with that comes opportunity. To take full advantage of this, the sector needs the right people, at the right time and with the right skills – and this can only be delivered through cross-sector collaboration. For example, initiatives to create specific training solutions within the sector and across the adjacent sectors could be deployed in order to promote the attractiveness of energy and utilities as an area to work in. This strategy is a critical first step in the process to ensure that the sector is ready for the challenge ahead.

13 Ofgem (2016), 'Code Governance Review (Phase 3): Final Proposals', 31 March, paras 4.82 and 4.83, https://www.ofgem.gov.uk/system/files/docs/2016/03/code_governance_review_phase_3_final_proposals_2.pdf.
14 20% reduction in greenhouse gas emissions relative to 1990 levels; 20% of energy supply coming from renewable sources; and a 20% increase in energy efficiency.
15 European Commission (1991), 'Official Journal of the European Communities. Council Directive of 21 May 1991 concerning urban waste water treatment'.
16 European Commission, 'Environment', Website section, http://ec.europa.eu/environment/waste/framework/targets.htm; European Commission, 'Waste – Review of Waste Policy and Legislation', Website section, http://ec.europa.eu/environment/waste/target_review.htm.

2 STRATEGIC PRIORITIES FOR THE SECTOR

The creation of strategic priorities for the sector – grouped into three themes – has helped to establish the key challenges and drivers of change in recruiting the skills base needed to deliver the infrastructure pipeline demands up to and beyond 2020–21. By examining the individaul strategic priorities, we have been able to identify recurring issues for filling vacancies and attracting and retaining diverse new talent to the sector. We can also effectively forecast the breadth of skills required for the future. The focus areas, proposed below, aim to address these challenges and ensure we are best placed to develop a sustainable talent pool for ongoing delivery of energy and utilities services.

1 Sector attractiveness and recruitment – to increase our future talent pool

1.1 Inspiring youth through schools, colleges, University Technical Colleges and universities

1.2 An inclusive approach to attract more diverse talent that is reflective of local communities

1.3 Innovative recruitment practices to ensure retention of talent in the sector

2 Maximising investment in skills – investment made by asset owners and their supply chain

2.1 Apprenticeships

2.2 Maximising value of the apprenticeship levy

2.3 Traineeships/trainees

2.4 Graduates

2.5 Retraining, upskilling and retaining a professionalised workforce

2.6 Procurement and the supply chain – the Skills Accord

3 Targeted action – to address anticipated skill gaps and shortages

3.1 Improvement of workforce planning intelligence to tackle regional pressure points

3.2 Consistent, high quality industry training and assessment provision

3.3 Workforce mobility, multi-skilling and transferability of skills

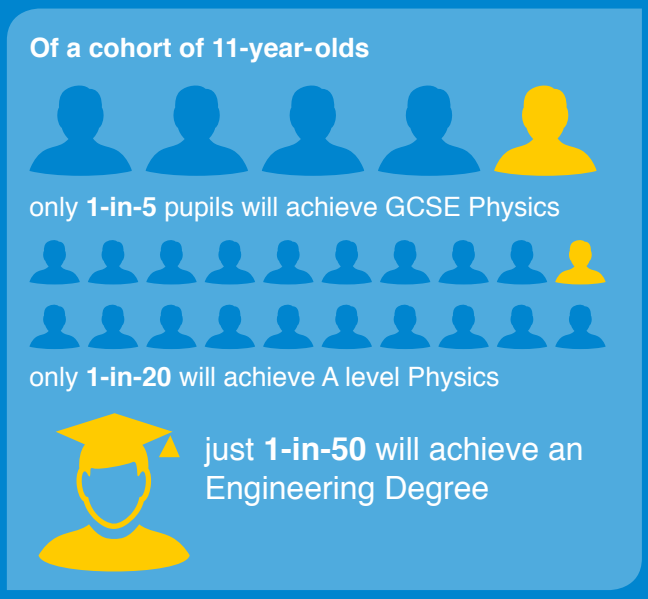
3.4 Recognising the need to attract overseas talent

Priority 1: Sector Attractiveness and Recruitment – to Increase our Future Talent Pool

Our overall objective is to broaden the talent pool through demonstrating the attractiveness of our sector, inspiring and attracting new talent. Failure to do so will ultimately inhibit business performance, increase business costs and prevent the delivery of key government targets in respect of the National Infrastructure Delivery Plan, the apprenticeship targets and associated social and economic objectives. Raising the profile and attractiveness of the sector to young people starting their working life is particularly pressing, given the sector's current age demographic.

Building a bigger future talent pool will ensure sustainability. To achieve this, the sector will need to transform the way it presents itself so that a wider range of people see this as an attractive option with clear pathways for future development. We must make sure we are:

- Working with schools and colleges to inspire and attract more young people, ensuring we retain more people at each stage (see diagram), and making the transition to employment as smooth as possible
- Taking an inclusive approach – ensuring the sector appeals to all communities, abilities and genders, including how we extend opportunities to hard-to-reach talent pools in order to attract and retain diverse talent
- Implementing recruitment practices that ensure talent is not lost to other sectors, recycling those who apply and are suitable but not taken on by the first employer point of contact
- Considering how we improve sector image over and above pay



Source: EngineeringUK (2016), 'Engineering UK 2016: The state of engineering'.

1.1 Inspiring Youth Through Schools, Colleges, University Technical Colleges and Universities

Objectives

To encourage more young people to consider the sector as a great place to start their careers, develop their skills and build their experience of work.

To promote the many positive aspects of working in the sector that make it appealing to potential recruits. These include:

- its 'green' environmental role
- its role in creating prosperity and social progress
- the chance to be a part of major national projects
- the high job satisfaction which comes from helping improve people's lives

The Challenge

Sector attractiveness and perceptions of the energy and utilities sector for careers among young people, their parents and teachers, remain a core concern for the sector's organisations.

Each year individual companies across the whole utilities sector spend considerable time and money engaging with and creating education centres throughout the UK. Targeting young people in schools and colleges has always been a significant undertaking for all involved, but it is widely recognised that success in recruiting is often limited to smaller-scale local companies, rather than consistent increases in intake nationally.

The sector continues to play a crucial economic and societal role, and technological innovations and environmental challenges are creating exciting new job roles and career opportunities. Key challenges that the sector faces in communicating this to young people in schools, colleges and universities include:

- **Sector visibility:** 51% of 16–18 year olds in education and training follow vocational and technical training programmes including apprenticeships in England. The challenge for our sector is ensuring visibility of the wide-ranging career opportunities available to these pupils, as well as targeting earlier ages and their careers influencers so they can make fully informed career choices.

  The energy and utilities sector is both dynamic and diverse delivering services critical to our national social and economic wellbeing, without which our society would not function. As new technologies are deployed, the sector has become home to cutting edge applications of innovation. In spite of this inspiring reality, the sector as a collective suffers from a particularly poor image compared to other industries, impacting their ability to attract talent from an early age.

- To increase visibility and appeal, employers not only need to build on current engagement activities, they also need to ensure they are using appropriate communications streams and language which is accessible to their target audience. This means increasing their use of social media and ensuring that their use of language does not lead to unconscious bias in job advertisements / careers information documents.

- **Improving the availability and accessibility of information about career entry routes, including vocational pathways:** The way careers information, advice and guidance are delivered needs improvement. 37% of respondents in a recent survey[1] stated they received 'poor / very poor' advice in respect of engineering and manufacturing, with only 22% of respondents rating their careers advice as good.

- **Influencing the key influencers of students:** It is not enough to target young people with information and advice about energy and utilities sector careers. It is a recognised fact that teachers, parents, guardians and carers have a significant part to play in the decisions which shape career directions for young people. In a recent survey, 57% of students reported that they believed that they had been influenced 'a fair amount or a huge amount' by their parents on education and career choices.[2] The sector must build on and improve its efforts to enlist understanding and support from these groups if it is to create sustainable improvements in job appeal and the visibility of opportunities.

  An effective way to do this will be to coordinate and enhance existing local success stories at a national level so that consistent and accessible information is always available to key influencers. This would help to mitigate the risk of duplicated or confused messaging and could

1 Industry Apprenticeship Council (2016), 'The IAC Survey: Research Report'.
2 Philips, C. and Newton, E. (2014). 'Parental influence on children's academic and employment choices'. GTI Media, p.5.

be enabled through partnerships with existing national initiatives such as the Careers Enterprise Company and Inspiring Futures.

The sector recognises that it could also make better use of 'easy win' environments like University Technical Colleges (UTCs), where vocational and engineering career pathways are understood, to promote the specific benefits of energy and utilities sector careers.

annual shortfall of Level 3 skill sets for engineering

69,000

39%

of UK employers have difficulty recruiting STEM-related professionals

- **Increasing the STEM skills pipeline and the visibility of energy and utilities sector opportunities within wider STEM campaigns:** The issues facing our sector in the UK are closely linked to the well-documented issues facing engineering and technology industries more broadly. Competition for STEM capabilities is fierce across most sectors of the UK economy and internationally. For example, EngineeringUK estimate the annual demand for workers with engineering skills through to 2022 to be around 182,000; and given the current quantity of supply of Level 3 + skills, there is a reported annual shortfall of 69,000 workers.[3]

  This is a similar situation around the world, resulting in high competition between top-end engineering firms, and no sign of this easing in the future. The prospect of Brexit could potentially limit the use of European talent pools for hard-to-fill vacancies.

  The widespread demand for STEM skills across all engineering-based sectors is clear from employers' surveys, such as those carried out by the CBI.[4] This survey showed:

  - 39% of firms that need employees with STEM skills and knowledge currently have difficulties recruiting staff
  - 55% of businesses recognise that they have a key role in enthusing young people about STEM

3 EngineeringUK (2016), 'Engineering UK 2016: The state of engineering'.
4 CBI (2013), 'Changing the pace: CBI/Pearson education and skills survey 2013'.

While there has been an overall rise in students choosing STEM-based academic and vocational routes to employment since 2010, there are still some challenges in further increasing the number of GCSE students choosing STEM subjects. Relatively new subjects, such as engineering, have continued their year-on-year increase in candidate numbers (7,714 in 2016), while chemistry (141,245), physics (139,805) and science (408,569) have recovered to near medium-term averages following two years of reducing numbers. Geography has also increased to its highest level since 2001. However, design and technology continues its downward trend reaching a new low in 2016 of 185, 279.[5]

For companies with a less attractive image than the leading engineering firms, competition for employees with STEM skills will be particularly tough.

It is crucial that energy and utilities employers engage fully in activities to expand the pool of people with STEM skills and ensure their career opportunities are at least as visible to interested talent as those in competing engineering sectors.

Progress to Date

Energy and utilities sector employers are already undertaking work to address the above challenges. There are numerous examples of employer initiatives which promote engagement, information and inspiration. These include:

- work experience schemes (including schemes for individuals not in education, employment or training – NEETs)
- school-based challenges which support curriculum delivery
- careers fairs
- apprenticeship recruitment
- strategic investment in UTCs

Achievements to date include:

Working with schools: Employers in our sector have long recognised the need to work with schools, colleges and universities, which are the source of young people for our future apprenticeship routes.

Some collective action to help coordinate investment in schools engagement has already taken place via the

5 Joint Council for Qualifications, http://www.jcq.org.uk/examination-results/gcses, accessed on 7 October 2016.

Energy & Utilities Skills Partnership, which has been instrumental in delivering over 50,000 engagements with schools since its establishment. These activities have helped to raise awareness of the sector, increase visibility of careers, improve careers advice materials and enhance understanding of learning requirements for specific careers. The most effective work carried out by the partnership was seen when organisations worked together at a localised level with schools in order to enhance their existing engagement programmes.

A great number of organisations also provide work experience which is a key area of support for schools influencing ages 14–18 including E.ON and Northumbrian Water, for example.

E.ON runs a youth pathway programme for youngsters aged 14–16 in Nottingham, and has seen huge benefits in terms of awareness. The pathway is designed to encourage students to think about their careers and enhance employability skills. More than 800 pupils have taken part in the company's workshops.

Northumbrian Water also have a range of activities led by their STEM ambassadors. For example, they take a Year 7 or 9 group for an 'Insight into Industry Day.' Using the full range of STEM, presentation and appropriate behavioural skills, groups of students are organised into companies which compete to win the contract to build a specific water tower to meet the needs of a particular town. The interaction with Northumbrian Water people also creates opportunities for the students to talk informally about their work. This is just part of the interactions with students which include mentoring, interview skills, STEM & Business Ambassadors, career events to name a few that result in over 9,000 face-to-face student interactions they have each year.

Raising careers awareness: The energy and utilities sector has worked collaboratively on national careers events including the Big Bang Fair and the Skills Show for a number of years. At these events, employers in competition for skills – such as E.ON, GE, National Grid and SSE – have collectively represented the sector. There are more opportunities for more employers to get on board with this kind of sector representation and there is sector commitment to pursue cost effective and meaningful opportunities for engagement with young people.

➔ We will continue to pursue opportunities where we believe there is the prospect of meaningful and cost-effective engagement with young people.

The sector has also worked to provide access to digital career and job information portals to increase visibility of employment options.

Two examples of this are the launch of Talent Source Network in 2015 – and a similar power industry-specific portal, Think Power, in 2011. Both of these digital platforms provide effective signposting of careers and specific job vacancies for students and young people.

Influencing the curriculum: Direct investment in UTCs has enabled employers to be more actively involved in the delivery of the national curriculum, linking theory to practical experience of our sector.

Meanwhile, the launch of Employability Bites has introduced the work of the sector into the curriculum, especially in Scotland where Employability Bites provided 'contextualised' learning bites that are mapped to the curriculum so they are delivered in class and not as 'add-on' after school activities, or localised fly in / fly out initiatives offered by many employers. These bites are packages of learning and assessment tools which in addition to being used directly in the curriculum, can also be used in employability programmes directly with employers.

Plans to 2020

While individual engagement programmes continue, and progress in coordination of cross-sector activities has been made, more work is still needed in order to meet the sector's skills and image transformation needs.

An opportunity exists to attract young talent in new ways, address social inclusion and increase workforce diversity as part of a wider sector strategy with enhanced collective benefits.

To achieve this, the sector will:

Create an identity that defines the sector and its added value to potential employees

It is essential that the sector comes together to define what it does and to communicate a compelling story about the contribution of the sector to society, the economy, individuals and the environment which can compel all age groups, altering the perception of young people as well as their key influencers.

The sector needs to ensure that the positive view the public has of many local utilities employers is translated to a wider appreciation of the energy and utilities sector in a way that combats the negative public perceptions which it has struggled to lose. As the sector seeks to develop its identity, it will need to paint a picture of the opportunities available and the types of people it wants to attract. This will include expressing that, while engineering skills are critical to the future of the sector, there are many non-engineering career opportunities and skill sets on offer and in demand. These include commercial and customer service skill sets as well as project management and digital technologies.

Having a clearer identity as a sector will enable better collaboration and more consistent communications with schools, colleges and universities. A foundation for this shared energy and utilities sector identity already exists in the vision set out for the power industry via the National Skills Academy for Power (NSAP).

Building on this in a way which is inclusive across the entire sector footprint – power, gas, water and waste management – will enable employers to use shared and consistent 'umbrella messaging' that defines the sector. This messaging should complement existing relationships which individual companies have established with educational institutions at local and regional levels.

Improve information advice and guidance for careers in our sector

Improving access and visibility of information, advice and guidance for careers is critical to inspire young people about the career options that are open to them in the energy and utilities sector. The different stages of influence in the educational journey are outlined in Figure 2. Both employers and government have a role in ensuring career opportunities are clearly expressed and visible to pupils and educators, ensuring that vocational and academic pathways are presented in a balanced way.

It is not only employers that have a role in this but government, where it can influence the educational system.

The focus should be on assisting the national agenda for also the promotion of STEM subjects and careers. The energy and utilities sector should also ensure that careers are represented on an equal footing in this national agenda, alongside opportunities in other engineering-based sectors.

Research conducted by ManpowerGroup shows that, of eight considerations in making a career choice, the type of work was the number one decision point for young people. This further supports the need for employers to harmonise messaging about the type of work available with national STEM campaigns, rather than purely focusing on company specific roles. The objective is to raise the number of pupils taking STEM subjects by providing insight on the range of work open to them and to ultimately expand the talent pool.

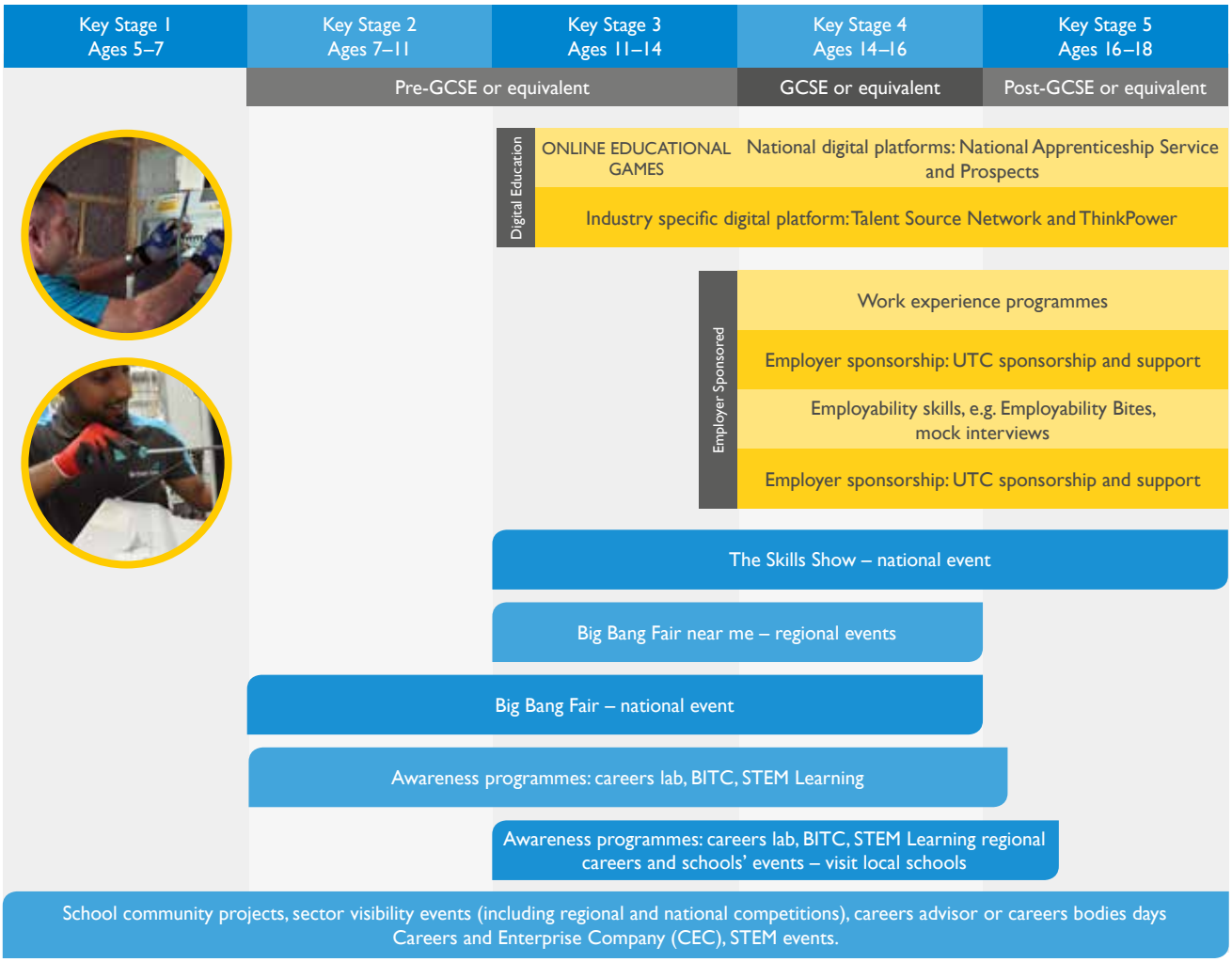


Figure 2: Key stages of engagement with pupils and students.

The sector must also continue to improve careers information and support for key influencers. Over 50% of STEM teachers[6] have asked for advice about engineering careers but only a third feel confident in giving such advice. The sector has an opportunity to make a big difference by ensuring key influencers have the right tools to raise the sector's profile, understand the opportunities and communicate these effectively to others. Equally, the influence of parents, guardians and carers in shaping career decisions must increasingly be recognised. In a recent survey conducted by the Industry Apprenticeship Council, 71% of the respondents said a parent, guardian or carer had most impact in their decision to enrol on an apprenticeship.

If employers can convince parents / guardians and carers that the energy and utilities sector is a desirable career destination, there could be a transformative effect on the potential talent pool.

➔ The sector is committed to creating and sharing case studies of real people in jobs to improve the visibility of careers and bring them to life.

➔ Our sector must further leverage the use of digital platforms to educate and engage talent, teachers and parents by giving them an easy-to-access resource which explains what the sector does and the careers it can offer.

➔ Working with government organisations, including the Careers and Enterprise Company, and National Apprenticeship Service, the sector can deliver consistent messages which reach and inspire young people and their influencers in a coherent way. The creation of a targeted communications strategy for parents is recognised as a key challenge for the sector.

Engage talent consistently and effectively to maximise impact

Research shows that young people who have had contact with employers at least four times are five times more likely to remain in education, employment or training than those who experience less employer contact.[7] The sector places high importance on being able to support schools with work experience where it can, and has made progress. There is still plenty more to do.

While the sector has made huge steps in improving sector attractiveness, one of the most effective ways is providing employability opportunities.

➔ The energy and utilities sector will therefore continue to focus on creating increased appropriate work experience opportunities and to have meaningful interaction with 14–18-year-old students. It also commits to improving early years engagement in order to communicate positive messages about the sector, while creating employability for tomorrow's talent.

Build on existing resources

Creating a sector-wide identity which can attract both breadth and volume of talent is a task which can only be efficiently and cost effectively undertaken by leveraging existing resources at local, regional and national levels.

Employers have successfully delivered local engagement initiatives together with educational institutions, to have maximum impact in addressing localised skills issues. There are also opportunities locally and regionally to coordinate engagement activities and leverage what already exists, with easy access to educational institutions like UTCs, which are potentially more receptive to engineering employer messages. While at least 22 energy and utilities companies have engaged with 53% of the current UTCs, as a sector, we need to maximise our coverage and continue to leverage what is out there already.

On national skills issues, the sector can do more to engage closely with established, non-sector specific, STEM skills campaigns such as EngineeringUK's Tomorrow's Engineers and STEM Learning, which help to bring careers to life for young people.

More general national community engagement platforms like Business in the Community (BITC) are also valuable resources for enhancing a collective sector identity. A sector commitment to a national community action programme such as BITC could align with the ethos of social responsibility.

➔ We will look to collaborate where possible to ensure more effective use of schools engagement resources. We commit to taking action which will minimise duplication of effort and that delivers appropriate engagement for local and regional communities.

Work with schools influencers and government on skills and the continuous development of curriculum

A sustainable approach to the development of skills which are relevant to a changing society and economy can only be achieved through consistent communication with those responsible for the development of the curriculum and for setting the parameters of school performance measurements.

6 EngineeringUK (2016), 'Engineering UK 2016: The state of engineering'.
7 City & Guilds (2012), 'Ways into work: Views of children and young people on education and employment'.

The sector must therefore do more to engage with Ofsted, HMIE (Scotland), ESTYN (WALES) and ETI (Northern Ireland) on their schools inspection frameworks. We must also do more to understand education policy drivers and core attainment concerns (e.g. Achieve 8 in England, Curriculum for Excellence in Scotland) as well as directions for curriculum development, especially in essential STEM subjects such as mathematics, science, design and technology and computing.

We need to ensure that those with responsibility for schools engagement with sector employers understand developments in education practice and policy. For example, there is a need to understand the role of technical subjects within the new Ebacc and the creation of pathfinder development routes as they are prepared for introduction by 2022.

Being able to work with schools influencers and government effectively, will have a direct impact on the number of young people who choose to take up vocational opportunities in the future.

Key bodies in the skills system across the UK include:

- Department of Education (DfE) in England
- Department for the Economy (DfE) in Northern Ireland
- Skills Development Scotland (SDS) and the Scottish Funding Council in Scotland
- The Welsh Department of Education and Skills in Wales

➔ The energy and utilities sector will support the development and implementation of key curriculum and education policy changes, to ensure alignment to business skills needs.

Build a sector brand and image for meaningful careers

Sector and employer visibility is key. According to ManpowerGroup research with job seekers in the UK, the most important aspect of an employer's brand is employer / employee trust (84%) followed by organisational reputation of the employer (71%), with the most credible source on an employer's brand being current employees of the company followed by the company website.

➔ The energy and utilities sector will work to be the trusted sector of choice in attracting talent, through raised visibility and consistency in communicating the opportunities available. Where appropriate, specific industry or regional challenges will be explored collaboratively.

Case Study: Reaching Young People

Background
Since 2014, employers have undertaken a wide variety of successful education and work experience activities. The main aim is to raise awareness of the types of careers available in the sector. These face-to-face, interactive engagements have helped to inform young people about how they can apply what they learn in school to real-life work.

Challenge
There is an urgent need to provide young people with better information and guidance on the types of careers available in the sector, and how this relates to their studies. Sixty percent of all jobs in the UK over the next ten years will require people to have studied STEM subjects.

Northern Powergrid – Light Challenge

Action
Northern Powergrid set primary school pupils in Leeds the task of designing a Christmas light while learning about energy. A total of 120 pupils took part in a number of workshops to aid their understanding of energy consumption, fuel poverty and lighting design. The children were given five weeks to research and develop a Christmas character or design with a safety theme. These activities encouraged children to think about engineering and understand what skills are needed to become an apprentice and work for a distribution network operator.

Outcome
The winning idea – 'Elf and Safety' – had pride of place in Leeds city centre, and displayed excellent creativity while promoting an important message about climbing pylons.

"An exceptional day for staff and students. Activities and experiences that have been so exciting and out of the ordinary. The children have loved it! Great opportunity for the children to work together and develop confidence and social skills."
Chris Wright, Hawksworth Wood Primary School

National Grid – Residential Courses

Action
Each year, National Grid sponsors and hosts a high-quality, week-long residential engineering experience at its National Training Centre with one hundred Year 10 students, 50% of whom are girls. The course was co-designed with the Smallpiece Trust, with the intention of attracting students with the aptitude to study STEM subjects at A level and beyond. Young people are given the opportunity to explore the world of energy generation, transmission and distribution through a series of interactive workshops and demonstrations. They learn about the UK's energy networks and visit facilities that encourage a deeper knowledge and understanding of the gas and electricity industries.

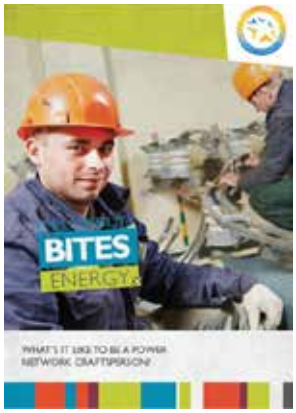
Outcome
The students take part in thought-provoking activities to find out how our energy demands will be met in 2030, meeting and working alongside engineers from National Grid to draw on their expertise and experience. The week helps students develop confidence, time management, and problem-solving, planning, presentation and team-building skills.

"In the years ahead, renewable energy will be more and more important. Having the best engineers will be crucial if we want to develop, so engineers will become even more important. I want to be part of that."
Elizabeth Haigh (15), National Grid work experience student

Case Study: Influencing the Curriculum

Background
Energy & Utility Skills and sector employers have set out to support, develop and deliver ways to provide young people with the academic foundations to pursue a career in the sector.

Challenge
There is a gap in knowledge and understanding about the type of careers on offer in the sector for young people. There is also a lack of vocational studies for young people which can be directly applied to jobs in the energy and utilities industries. Employers have identified that there is a shortfall in the types of attitudes, behaviours, knowledge and skills they expect to see.



Developing 'Employability Bites'

Action
The Employability Bites programme gives young people the opportunity to learn real-world skills while still receiving lessons relevant to their coursework. They provide the basis for a new type of employability curriculum. 34 short bursts (bites) of applied activity are designed to introduce young people to the work of the energy and utilities sector.

Outcome
Current work is underway with SDS and Energy & Utility Skills to position the Bites even closer to schools and the school curriculum, identifying areas of the Scottish Curriculum for Excellence that represented clear opportunities to introduce the work of the sector. Bites were created to allow employers to work with teachers to enhance and deepen the learning experiences of young people studying National 4, National 5 and Higher qualifications (the Scottish GCSE and A level equivalent qualifications.) They are designed to be scalable with every Physics or Chemistry learner in Scotland learning the same content.

Jane Allan, Sector Manager at Skills Development Scotland, said: *"The strength of this model of learning is giving pupils the opportunity to see how classroom subjects are applied in the workplace."*

Working with University Technical Colleges (UTCs)

Action
University Technical Colleges (UTCs) are an alternative to traditional schools for 14–19 year-olds. Funded by government and supported by large employers, they teach technical and scientific subjects alongside traditional academic subjects to the inventors, engineers, scientists and technicians of tomorrow. Our sector is involved with 52% of the current UTCs, mostly in the technical / engineering arena, and at least 22 companies proactively involved in supporting them.

The most recent UTC opened in September 2016, led by Anglian Water, the Greater Peterborough University Technical College (GPUTC). Anglian Water staff work closely with the teaching staff and are directly involved in the young people's education by helping set the curriculum, leading projects and providing feedback and mentoring to students. Many other UTCs are supported by our sector, including the South Devon UTC focusing on science, engineering and environment studies, which has a partnership with South West Water and three other organisations, including the Environment Agency.

Outcome
"Our involvement aims to help students reach their potential by making the learning they do as real world as possible – working with the teaching staff to bring the world of work into as many subjects as possible. Students also get to see the huge range of potential jobs in our industry and how those jobs contribute to our society, meeting real people doing those jobs and learn about the world of work at a young age."
Phil Brown, Head of People Development for Anglian Water and Chair of Governors for GPUTC

"This new UTC is an exciting development which will improve the job prospects of thousands of young people throughout the region. We're only too pleased to be able to support South Devon UTC in the knowledge that it will give the next generation of scientists, environmentalists and engineers the solid, work-based grounding they will need to succeed."
Dr Stephen Bird, South West Water Managing Director and Chair of the UTC Project Steering Group

1.2 An Inclusive Approach to Attract More Diverse Talent that is Reflective of Local Communities

Objectives

To attract candidates from the broadest range of skills and abilities possible, irrespective of gender, ethnic background or sexuality.

To create more flexible entry and progression routes for diverse talent so that inclusiveness grows at every level in sector organisations.

"Diversity is crucial for innovation: in a global survey, 85% of corporate diversity and talent leaders agreed that a diverse and inclusive workforce is crucial to encouraging different perspectives and ideas that drive innovation"
Forbes insights – Global Diversity and Inclusion – Fostering innovation through a diverse workforce[8]

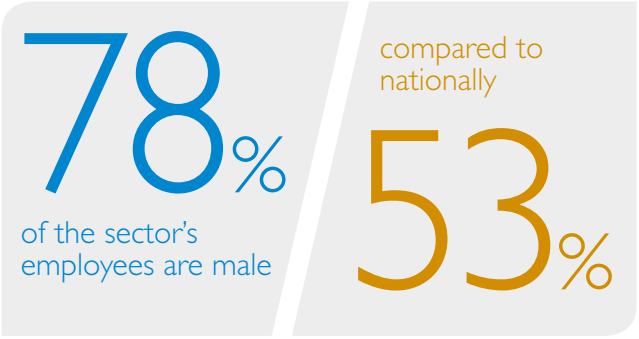
The Challenge

We have a talent shortage looming, with a high demand for core engineering skills as well as commercial and management abilities. And yet, the energy and utilities sector is failing to access the total breadth of talent available in the working population, or to attract talent from a diverse pool of individuals exiting education. This is limiting the sector's ability to respond to talent replacement and growth pressures.

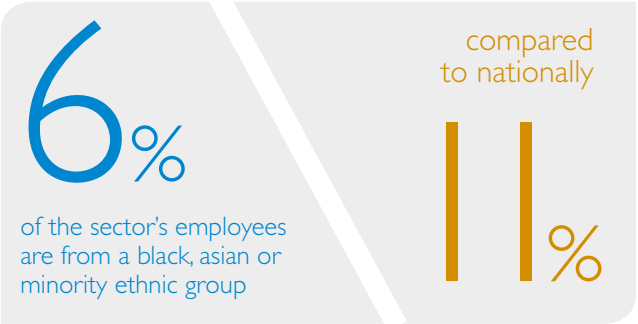
The challenges we need to address in order to improve inclusion and diversity include:

Ensuring gender balance:

Like many other engineering-led sectors, the workforce is dominated with white male employees. Across the sector's employee base, 78% are male compared to the 53% UK average.



Addressing ethnicity balance: Of the workforce, just 6% are classified as black, asian or minority ethnic (BAME) compared to 11% of the total UK workforce. This is the same proportion as seen across the European energy workforce. It is also in spite of the fact that 30% of STEM-related university students were of a BAME background in 2013–14.



Raising awareness of disability: Across the UK just 46% of disabled people of working age are in employment, compared to 76% of non-disabled people. Given the plethora of opportunities in all areas of the sector, people with disabilities are recognised as an untapped talent pool, which could provide the sector with essential skills while also giving individuals enhanced independence.

Understanding roles with the heaviest gender bias: There are significant variances in gender balance across the sector workforce with regard to different job types and groups. For example, in elementary, operative and skilled trade occupations more than nine out of ten employees are male (92%, 98% and 99% respectively). Males also dominate the technician (73%), engineering (81%) and management (84%) levels of the workforce.

There are also issues at a leadership level. A PWC report conducted in 2015 found that a median of just 21% of senior management roles within the sector are held by women, suggesting there are barriers to progression. In the wider engineering workforce the proportion of the workforce that are female is just 9%;[9] furthermore, just 6% of registered engineers and technicians (i.e. CEng, IEng, EngTech) are female.[10]

8 Forbes insights – Global Diversity and Inclusion – Fostering innovation through a diverse workforce, Forbes Insights, 2011 http://images.forbes.com/forbesinsights/StudyPDFs/Innovation_Through_Diversity.pdf.

9 The Institute of Engineering and Technology (2015), 'Skills & Demand in Industry'.

10 EngineeringUK (2016), 'Engineering UK 2016: The state of engineering'.

The regions of England where the ethnic make-up of the sector's workforce is significantly below that of its resident workforce are (%):

Yorkshire and The Humber (4% compared to 8.5%)

North West (3.1% compared to 8%)

North East (2.2% compared to 4%)

London (17.2% compared to 36%)

East Midlands (5.2% compared to 8%)

East of England (1.9% compared to 9%)

UK Average = 5.5%

Note: No data available for Northern Ireland.

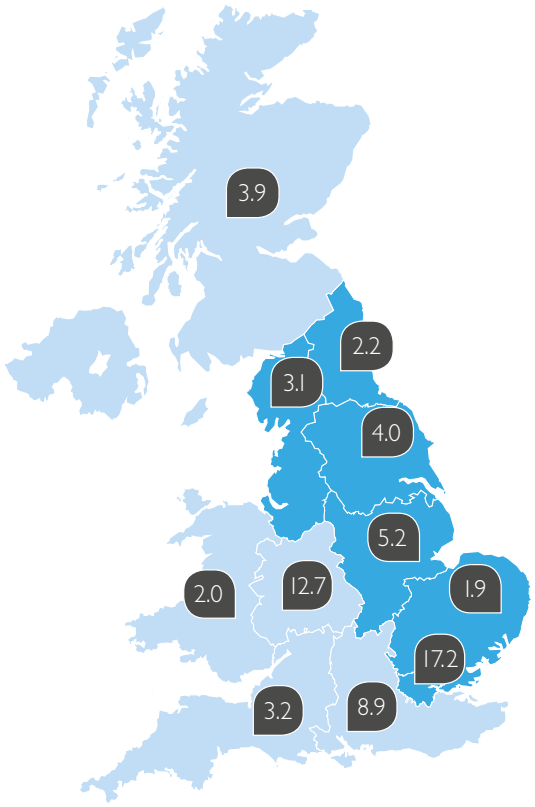


Figure 3: Regions of the UK where the ethnic make-up of the sector's workforce is significantly below the regional average. Source: ONS (2016), 'Annual Population Survey, April 2015 to March 2016.'

This is the lowest percentage of female engineering professionals in Europe, in stark contrast to Latvia, Bulgaria and Cyprus where nearly 30% of engineers are female.[11]

The lack of diversity perpetuates sector image stereotypes and makes it difficult for employers to extend their appeal to the full breadth of available talent.

Accessing hard to reach talent pools: The energy and utilities sector believes in the need to be inclusive to a wider pool of candidates. This includes harder to reach talent pools (e.g. those Not in Education, Employment or Training - NEETs) as well as career changers from other sectors including service leavers, the older workforce and returners (post career break). The current workforce consists of five generations; thus, different approaches are required to attract, retain and motivate them (explained further in section 2.5 – see Table 3).

Creating flexible entry routes: the sector's commitment to being inclusive in its approach, means that it must continue to develop flexible pathways to enable key target groups to enter the sector.

This is a significant opportunity to ease skills pressures by broadening the pool of talent being attracted and retained in the sector. The value of this opportunity is multiplied in an environment where unemployment is at its lowest level for over a decade (4.9%) and the female employment rate is at its highest since 1971 (69.8%).[12]

Progress to Date

The sector has made progress on its approach to being more inclusive and addressing some of the diversity issues it faces. However, energy and utilities organisations recognise that inclusiveness remains an important challenge for the sector, and are actively deploying strategies on a business by business basis to increase diversity and inclusion.

11 http://wwwtheguardian.com/politics/2013/nov/04/vince-cable-uk-economy-female-engineers, accessed Feb 2014.

12 ONS, (2016), 'Labour Force Survey, September.' Accessed from https://www.ons.gov.uk/employmentandlabourmarket/peoplenotinwork/unemployment, November 2016.

Key achievements to date with regard to improving inclusiveness and diversity in the energy and utilities sector include:

Collaboration and development of best practice for inclusion

Some sector employers are members of the Diversity and Inclusion Leadership Group (DILG). This was established in 2013 by the Royal Academy of Engineering as a collaborative group of around 40 engineering employers, institutions and sector skills councils, to increase diversity across engineering employment.

One of the key priorities of the DILG was to develop and share examples of robust diversity and inclusion practice, from engineering employers, in order to inspire others to follow their lead resulting in the development of a toolkit.

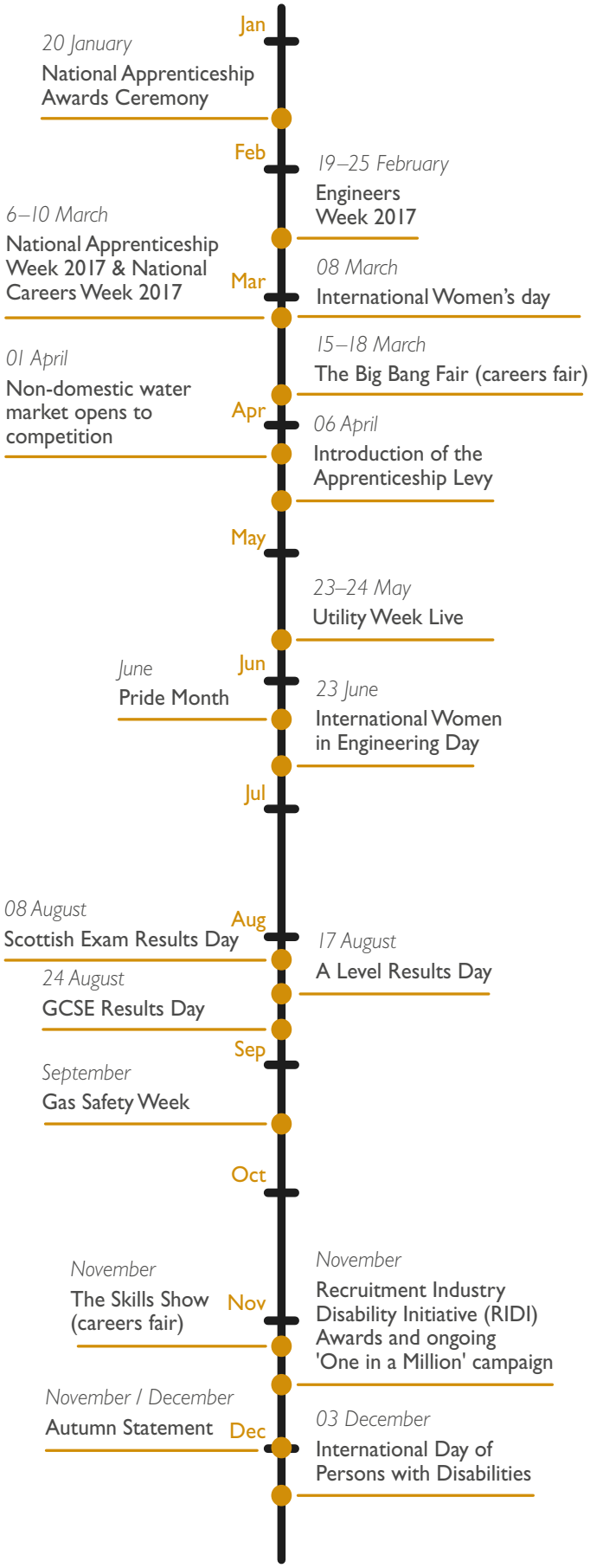
The Academy and its DILG employers worked with the Women in Science and Engineering (WISE) campaign and its corporate partners in 2014 to develop an industry-led ten-point plan to address engineering gender balance. This recruited 20 signatories of which seven are from our sector. They are: National Grid, Amey, Amec Foster Wheeler, Balfour Beatty, Siemens, Severn Trent Water and the Northumbrian Water Group.

Another collective action to address sector inclusiveness is the POWERful Women initiative, which celebrates female talent and success in the energy sector and promotes career progression for women. SSE, GE, British Gas, EDF Energy and E.ON are active supporters of this initiative.

Other organisations in the sector also display individual best practice in addressing inclusion, demonstrating leading edge inclusion and diversity practices; for example, Yorkshire Water are leading the way, as the first utility company to achieve the National Equality Standard.

Creating 'returnships' to reduce attrition following maternity / career breaks

Of the estimated 22,000 qualified women who left engineering after maternity / career breaks, more than 75% wanted to return to work according to the Women's Engineering Society. However, many women are put off pursuing such returns because traditional roles in energy and utilities, and the wider engineering sector, are seen to be inflexible in terms of working hours and practices. As our workforce evolves and expectations around flexible working increase, changing this is crucial to improving inclusiveness more broadly, not just for women.



'Returnship' programmes offer a structured way to retain talent in the long term and to begin introducing more flexible work patterns in the sector. Early adopters of returnships include:

- SSE: This organisation has introduced 'returnships' for women with STEM skills, and is being delivered in partnership with Prospect and Equate Scotland. SSE recognises that across the skills spectrum women take career breaks, largely for family reasons and has therefore introduced a programme of advanced career support during and after parental leave.

- Centrica: This organisation has partnered with MARS, Vodafone and Women's Returners to launch the hitreturn programme (www.hitreturn.co.uk). This is a 12-week programme for professionals wanting to return to work after a career break. These programmes not only attract talent but also help retain existing female talent within the organisation.

Working with disadvantaged communities and hard-to-reach talent pools

There are numerous examples of programmes within the energy and utilities sector which reach out to disadvantaged communities and NEETs in order to enable talent in these pools to realise its potential. Most programmes are run individually by companies and focus on offering traineeships and employability programmes as feeders into employment or apprenticeships. Like many employers across the sector, Balfour Beatty experience difficulties recruiting from a diverse pool of candidates and acknowledge a reliance upon conventional channels. To address this issue in a positive way that also benefits society, in 2016 they actively engaged with organisations who could support them in attracting and recruiting ex-military personnel, ex-offenders and homeless people, against set recruitment targets.

Non-employer-led programmes that help individuals from disadvantaged backgrounds realise their potential also exist across the UK. A successful example is the 'Bridge to Employment' scheme in Northern Ireland. This is a pre-employment training programme, run by the Department for the Economy in Northern Ireland, which helps employers recruit unemployed people regardless of their experience of work. Training is provided according to availability of vacancies and aligned with the requirements of the role. Bridge to Employment has been offered and funded for the past 20 years. Energy & Utility Skills has, in the past 12 years, brokered more than 500 trainees into training and jobs spanning the power, gas and water industries.

Establishing partnerships with key talent providers

Partnerships have started with key organisations who represent target talent communities, through the industry talent pool platform Talent Source Network, developed through the Skills Partnership. Key partners include Career Transition Partnership (CTP) to work with service leavers, the Department for Work and Pensions (DWP) to work with people currently unemployed and other sectors including oil and gas and advanced manufacturing to identify possible career changers. The objective of these partnerships is to simplify how key target markets engage with our sector, working with key partners to make the opportunities more visible to talented people with a focus on understanding and then removing barriers to entry.

Plans to 2020

We will increase diversity in the energy and utilities sector by escalating efforts to be more inclusive to a wider talent pool both on entry and in career progression. As a sector, we recognise that increasing diversity will also enable better customer service – because our workforce will more accurately reflect the sector's customer base – and enable more innovation. To improve and escalate inclusiveness across the sector as a whole, employers commit to:

Leverage existing regional and national resources

There is excellent work already underway in the energy and utilities sector and across the wider engineering sector to address gender balance and workforce diversity.

The sector will align itself with key organisations to ensure that it is seen as an active participant in national cross-engineering diversity schemes, such as those led by WISE (Women in Science and Engineering) and WES (Women's Engineering Society). It will also continue to build the sector's support for the DILG and to encourage more employers to sign up to its ten-point plan.

➔ The sector commits to collaborating at a regional and national level to share best practice and increase the focus on diversity and inclusion enabled by a sector Inclusion and Diversity Taskforce.

➔ The sector also commits to establishing a consistent message about its commitment to inclusion. To this end we will gather a set of compelling case studies and individual success stories which describe sector commitment in a positive way.

Work to achieve gender pay parity
While many employers are making progress in addressing gender balance and some have begun work to equalise gender pay gaps, this is an area with significant scope for improvement across the sector as a whole.

Recent research shows that there is a 19.6% (translating to £9,190 per year) pay difference between men and women in the energy and utilities sector. In part, this is because males dominate senior roles, which command higher salaries.[13] Ahead of new legislation, due in April 2017, some organisations have been proactive in disclosing data on gender pay gaps. SSE is perhaps the foremost example of this.

➔ The sector commits to increasing transparency on gender pay disparities and to being proactive in meeting requirements to publish information on this. The sector also commits to doing more to ensure capable women are given an equal opportunity and have access to support to enable them to attain more senior roles which command higher pay.

Tackle unconscious bias within and prior to recruitment processes
Perceptions of the gender association of certain job roles and the accessibility of certain careers to individuals from minority backgrounds are often formed early in childhood.

In addition, job adverts often compound these perceptions. Research by the University of Reading[14] finds that gendered wording in job advertisements exists and that this actively sustains gender inequality.

➔ The energy and utilities sector will make a conscious effort to ensure that gender association with certain roles is broken down as a part of ongoing work with schools, along with the promotion of STEM subjects.

➔ The sector commits to addressing unconscious bias across the talent management life cycle starting with recruitment language and practices.

Increase activities to be inclusive to other minority groups:
As a sector we will continue to tackle the issue that there is low representation from the BAME and disability categories, to ensure the sector is representative of the local communities it serves. This is especially important given the changing composition of the UK population over the next ten years.

It is also recognised that more needs to be done in engineering generally to counter the negative effect on productivity of homophobia in the workplace.[15] Conscious inclusion of lesbian, gay, bisexual and transgender (LGBT) people is vital for our sector.

➔ The sector is committed to creating apprenticeship diversity and will support the Government's target of a 20% increase in the number of BAME candidates in apprenticeships by 2020. The energy and utilities sector will support initiatives and partners as they seek new ways to bring more disabled people into the workplace.

➔ The energy and utilities sector will also support national inclusiveness initiatives for LGBT individuals in the workplace and ensure the working practices and policies in individual companies incorporate key messages to tackle conscious and unconscious bias.

➔ Leveraging the work that is happening already and identifying strategic partners is key. By the end of May 2017 we will define key strategic partners supported by an implementation plan, to gain access to diverse talent pools and efficient engagement that can complement existing company strategies.

Improve flexible working opportunities and make it easier to return from career breaks:
Being inclusive also means being flexible for individuals with different working requirements and expectations of work-life balance – including Generation X and millennial employees.

The sector sees value in providing a viable career pathway for service leavers and in working with other sectors to benefit from transferable skills.

➔ In the long term, the sector would like to ensure consistency in the support and advice available for talent looking to return to work following a career break, or for talent looking to transfer from other sectors.

13 Chartered Management Institute (2016), 'National Management Salary Survey'.
14 Analysis of job adverts and barriers to application (http://www.hestem.ac.uk/activity/analysis-job-adverts-and-students-reading-job-adverts-identify-barriers-students-applying-j).
15 Shelbrooke. A, et al (2015), 'Engineering in action: Tackling homophobia in engineering report'.

Case Study: Diversity and Inclusion Initiatives to Reach Untapped Target Talent Groups

Background

Employers and stakeholders have been working hard on a number of initiatives across the sector to promote and improve diversity and inclusion.

Challenge

Across the sector only 5% of the workforce are from a BAME background. In addition to this, 82% of the entire energy and utilities workforce is male. Twelve percent of all young people aged 16–24 were classified as NEET in January–March 2016. It is also widely recognised that the sector has become too reliant upon traditional recruitment methods for sourcing new talent.

Regional Employability Programmes

Action

The North West Pilot (the Pilot) was a multi-company pilot project established to generate youth employment opportunities involving the selection and support of young unemployed people through a ten-week support programme. Facilitated by Energy & Utility Skills, and led by United Utilities, the programme comprised two weeks of pre-employment activity and eight weeks of relevant work experience. United Utilities (North West) supported the transition of the pilot into a national initiative that incorporated British Gas, Northumbrian Water, Siemens, SSE and UK Power Networks as lead employers in the North East, London, Midlands and Scotland.

To date ten programmes have reached in excess of 150 NEET candidates, many of whom have progressed into the world of work directly through lead businesses, their supply chain, or partners in the sector.

Outcome

United Utilities Regional Programme

"Before attending the programme I lacked confidence in my communication skills. I know they have improved and are still improving. I have learnt a lot as a result of taking part. I now know so much more about careers and recruitment; I've also learnt a lot about myself. I am now proud to say I have a career as an apprentice scientist in Scientific Services at United Utilities with many opportunities ahead of me."
Bethany Jones, Customer Advisor, United Utilities

Wider Recognition:

- Institute of Water Northern Innovation Award 2015
- Institute of Water National Finalist Runners-up 2015
- Utility Week Community Finalist 2015
- North West Armed Forces Business Award – United Utilities, Winner July 2016

SSE – Changing Lives, Growing Value

Action

SSE has been working with children's charity Barnardo's for nearly a decade to support young people aged under 25 who are NEET. In March 2016, the employer published its 'Changing Lives, Growing Value' report. The report quantifies the impact of investing in young people and makes the business case for other sector employers to follow suit.

Outcome

The report concluded that for every pound spent by SSE, there is a £7.67 return on investment, divided between the young people themselves, SSE and other organisations that have gone on to employ them.

"The success of the young people in this programme is testament to their grit and determination; they just needed a helping hand on the ladder. Different people, from different backgrounds, have different starting points and sometimes they need a different route to get them into their career."
John Stewart, HR Director, SSE

Case Study: Diversity and Inclusion: Addressing the Gender Pay Gap

Background

The UK Government has introduced a requirement from 2018 onwards for companies with over 250 employees to annually disclose their gender pay gap as at 30 April 2016.

Challenge

SSE has reported a gender pay gap of 19.4% for 2015–16. This is broadly in line with the UK gap of 19.2%.[2] SSE operates within a traditionally male-dominated sector which consists of 18% women.[3] While SSE's proportion of female employees is around 30%, SSE still has a lot of work to do.

[2]ONS, April 2015 figures. [3]ONS, Labour Work Force Survey 2015.

SSE – Rewarded for Diversity and Inclusion

Action

SSE won the 'People in Power' 2016 Award for Diversity and Inclusion Initiative of the Year at the National Skills Academy for Power (NSAP) annual conference and awards. The award recognises employers that are taking action and increasing the diversity and inclusion of their workforce. Supporting their existing female network has been fundamental in helping to drive improvement with recruitment figures. SSE is in the first year of its diversity and inclusion campaign and they have set themselves a number of targets – something very much supported at Executive level.

Gender balance has been placed at the heart of SSE's recruitment and marketing campaigns: the company sponsored The Women's FA Cup Final, advertised at high-profile venues, used video blogs, and presented at schools, careers events, colleges and universities showcasing SSE's female workforce. To support diversity and inclusion SSE has launched the SSE STEM Forum for Women and are supporting a Women Returners to STEM initiative in conjunction with Equate Scotland.

Outcome

Although it is too early to quantify the impact of SSE's inclusion and diversity work to improve gender balance within the business, the evidence of the company's efforts is clear. A whole range of initiatives are underway, which involve education partnerships, recruitment campaigns, flexible working practices, 'returnships' for women after a career break, pay equality commitments and sponsorship activities specifically targeted towards female audiences.

1.3 Innovative Recruitment Practices to Ensure Retention of Talent in the Sector

Objectives

To ensure fit-for-purpose, efficient and cost-effective recruitment processes are adopted by leveraging our resources.

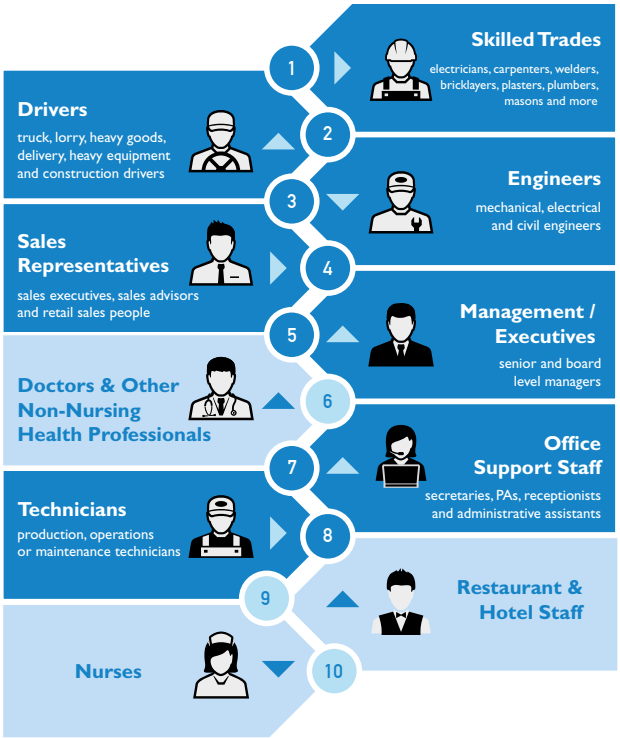
To maximise the talent that we have within the sector, whether it is potential talent that is unsuccessful in recruitment processes or out-placed talent during organisational restructuring.

To create a positive candidate experience, ensuring that the energy and utilities sector is seen as the sector of choice.

The Challenge

In tackling our ageing workforce, the new demands of the NIDP projects and emerging technologies, the need to attract and retain talent in our sector is more crucial than ever before in meeting our skills challenges and in avoiding increased levels of skills shortages.

With 36% of our vacancies identified as hard to fill (compared to the UK average of 23%), we have shortages in non-engineering commercial skill sets including IT, project management, quantity surveying and change management. With regard to these capabilities we know the sector is in competition with other industries and certain regions with high employer density are experiencing particularly intense competition for talent. Once again the UK is not alone when it comes to sector skills shortages; for example, 78% of European wind energy companies find it difficult or very difficult to find suitable trained staff.[16]



16 Europe and Wind Energy Technology Platform (2013), 'Workers wanted: The EU wind energy sector skills gap'.

7,000

number of vacancies in the energy and utilities sector, recorded July 2016

number of vacancies in the sector is increasing

The 2016 talent shortage survey[17] shows the top ten hardest-to-fill positions in the UK, of which seven directly impact on the energy and utilities sector, compounding the recruitment challenges we already have, as competition for talent increases.

Furthermore, ManpowerGroup report that the growth in the 'net employment outlook' (the difference between the proportion of respondents looking to increase their workforce and those looking to decrease it) has grown in the utilities sector during 2016, more than in any other UK sector, adding further evidence of a dynamic sector looking to recruit new talent.[18] To recruit and retain talent within the energy and utilities sector we need to acknowledge the challenges with regard to inclusiveness and the visibility of career pathways in addition to the rising costs of recruitment. There is also a particular need to think about challenges associated with:

The sector's regulated environment: The regulatory cycle strongly impacts retention of staff in our sector. British Water estimates that the regulatory cycle has a 3–5% impact on productivity based on costs of redundancy and rehiring staff alone, resulting in 20,000–40,000 lost jobs across the water sector within each 5-year period. Ofwat confirms that cyclical investment has led to inefficiencies and higher customer

17 ManpowerGroup (2016), accessed from http://manpowergroup.com/talent-shortage-2016.

18 ManpowerGroup Employment Outlook Survey, Q4 2016, accessed from http://www.manpowergroup.co.uk/the-word-on-work/meos-q416/.

bills.[19] This is estimated to cost the water industry alone some £600mn–£1.1bn, impacting firms which operate under economic regulation and also their suppliers.

The sector's predicted skills gap: The urgency of the situation is stark – the energy and utilities sector will have to make an estimated 221,000 new appointments over the next ten years (31,000 new jobs and replacement demand of 190,000). However, adjacent sectors' operations and skills requirements will demand more than three times this figure (760,000).[20] Table 1 outlines the number of people our industries will need to fill by 2025.

Table 1: Number of people energy and utilities firms will need to fill forecast vacancies by 2025.
Source: Energy & Utility Skills workforce planning data.

Industry	New jobs	Replacement demand	Net requirement
Gas transmission & distribution*	Remain stable	22,000	22,000
Power	10,000	53,000	63,000
Waste management	9,000	53,000	62,000
Water	2,000	61,000	63,000
Smart meters	10,000	1,000	11,000
Total	31,000	190,000	221,000

* Excludes oil and gas extraction

Differing generational expectations of employment and careers: Traditionally the energy and utilities sector has promoted its ability to offer a 'job for life'. This message will need to change from jobs to a careers focus and become more nuanced if the sector is to strengthen its appeal to millennials, who will make up 35% of our workforce by 2020 and 75% of our workforce by 2025. Research shows that millennials seek security of career rather than job security and align their values to that of a sector. Just 4% of millennials globally expect to work with just one employer,[21] suggesting that work to support skills mobility within the energy and utilities sector, as well as work to sell a strong sector identity, is essential if we want to retain millennial talent.

Candidate experience: Growing evidence suggests that if a young person applies for a role and their recruitment experience is poor, they can be turned off from the whole sector. This suggests that poor recruitment practices by a few employers could be undermining the ability of the sector as a whole to retain the interest of talented individuals.

19 Utility Week report – water sector could save £1.1bn by smoothing of investment cycles.
20 Warwick Institute for Employment Research / Cambridge Econometrics (2014), 'Working Futures: 2014 to 2024'.
21 pwc (2011), 'Millenials at work: Reshaping the workfplace'.

Progress to Date

The sector has made progress in updating and innovating in the area of recruitment practices. Employers have worked individually to enhance their employer value propositions and, in some cases, have begun collaborating with their supply chain to share talent. The most significant collective step to revitalise talent recruitment and retention for the sector was achieved through the Skills Partnership's development of a national talent pool – Talent Source Network. This digital platform is a go-to place for talent interested in the energy and utilities sector who fails to reach employment on their first point of contact with the sector.

A sector talent pool

We must be able to attract and engage talent at a sector, industry and employer level, ensuring we have appropriate talent pipelines as well as engaging with relevant key industry partners. The aim of our shared talent pool (delivered via our platform Talent Source Network) is to enable potential employees to understand our sector, to make opportunities in our sector visible and give them the opportunity to directly connect with employers. For energy and utilities employers, this is the first step to ensuring that the sector retains the strongest candidates when there are simply not enough jobs immediately available to be offered by any one employer. This step will reduce recruitment costs and ensure that a continuous dialogue is maintained with willing, competent and enthusiastic talent who are openly keen to start a career in the industry. As an example under this system, larger employers are able to cascade suitable candidates they simply cannot find room for, in to smaller companies in the supply chain that are short of recruitment resource. For candidates, the sector talent pool gives them easier access to our sector, and a simpler way of understanding our opportunities.

Targeting under-represented talent pools

The sector has also made steps in attracting and engaging with different talent pools, working with people from harder-to-reach and underrepresented backgrounds, and working with young people who are Not in Education, Employment, or Training (NEET). Under the Skills Partnership, pre-employment programmes to target NEETs were developed, with 93% of the young people on the programme securing jobs or progression, while the remaining 7% were referred to the Talent Source Network for other employers to access.

Recruitment process

The changing employment landscape is impacting how the sector employs talent, ensuring fit-for-purpose recruitment processes and compliance are key considerations.

Organisations are adapting and changing their working practices and approach to be ready for the next generations of talent, while being inclusive of all existing talent pools. In some cases organisations are offering tailored entry pathways for specific targeted talent pools.

Plans to 2020

We must explore ways the sector can collaborate in non-competitive areas to collectively achieve greater impact. Having launched Talent Source Network, the sector needs to fully adopt the initiative, enabling it to grow into an important resource that promotes our sector value proposition to talent and key stakeholders and partners.

Target talent pools

With 2,500 candidates already in the pool, the plan is to grow this to 10,000 by 2020. The focus will continue to be apprentices, service leavers, and professionals from other sectors or outplaced from our sector. We will enhance the experience by giving candidates greater choice of, access to and knowledge about sector opportunities.

➔ To double the size of the talent pool by the end of March 2018, the sector's employers are committed to referring surplus or outplaced talent to the talent pool, especially engaging the supply chain, where possible.

Industry and talent partners

The plan is to expand the coverage with relevant partners to help the employers in the sector meet their talent objectives. Initially, the focus has been on three to four key partners. It will expand to include key partners for youth employment and women in engineering, while continuing to increase the number of service leaver partners and focus on career changers, so as to attract lost talent back to the industry.

The objective is to grow the number of active partners from three to ten by 2020, focused on further developing access to apprentices, service leavers and other target sectors.

Employer usage

We plan to expand from 11 companies in the current Talent Source Network to at least 20 employers in 2017. These employers will share job opportunities, refer their surplus entry level talent (including apprentices and graduates) to the talent pool, and ensure outplaced talent is retained by referring it to the network and using this as a recruitment platform. Working with the supply chain to aid their ability to recruit is a key objective.

➔ Twenty employers will commit to undertaking a 12-month pilot programme in 2017, to embed Talent Source Network and demonstrate that it tackles the sector's skills challenges.

Case Study: Recruiting and Retaining Talent – a Sector-wide Talent Pool

Background

In partnership with employers, Energy & Utility Skills set up a sector-wide talent pool. Talent Source Network is a unique, professional network. It brings together sector employers, training and education organisations, and people looking for work or their next career move.

Challenge

There is a high demand for new talent and the right people to be in the right roles at the right time. It is estimated that the sector needs 221,000 new people in the next ten years. 56% of the Government's NIDP is assigned to the energy and utilities sector. This makes the sector the largest single contributor.

Talent Source Network

Action

Full of exclusive, sector-specific information and exciting opportunities, Talent Source Network features news, events, jobs, training options and more. At the Network's heart lies a powerful social media site. Potential candidates can register to join this secure online community and enjoy the Network's resources. Key partners including DWP and CTP will refer talent in for entry level positions including apprenticeships as well as for cross-training roles, e.g. for service leavers looking to make the transition into our sector. Crucially, in the event of a high-quality candidate being unsuccessful with one employer, they can be referred to another so that talent is retained within the sector.

Outcome

There are currently 2,570 individuals signed up to the Talent Source Network. Michael Clark, now a Trainee Smart Metering expert with British Gas, found the Network to be the key that unlocked the door in his search for a new career after leaving the Royal Navy, when he was referred in by a talent partner Future Horizons:

"I didn't think I was going to get anything and was losing hope. Then Talent Source Network came along and I saw the job with British Gas and I realised that this could be something!"

Employers in the sector are also finding the Network to be a valuable tool in sourcing new talent from fresh sources:

"This provides us with a great sector-specific platform to engage candidates considering a career in the energy sector. It perfectly complements our mix of existing channels and in addition offers us an opportunity to put great candidates we know in touch with other organisations across the sector."
Head of Volume Resourcing, British Gas

Priority 2: Maximising Investment in Skills – Investment Made by Asset Owners and Their Supply Chain

The overall objective is to maximise investment in skills, ensuring that people who are recruited can acquire the right skills quickly and effectively. This will speed up the process of people becoming productive, encourage further investment in skills from asset owners and their supply chain, see continued investment in apprenticeships with a high return on investment, and motivate employees to stay as they gain in confidence and feel they are contributing usefully to their company.

- Accessible and effective entry routes including traineeships and apprenticeships
- High-quality apprenticeships supporting all occupations and providing progression to higher-level skills
- Maximisation of the value from the levy to support investment in the key skills required by the sector
- Continued investment in retraining, upskilling and retaining a professionalised workforce
- Encouragement of investment throughout the supply chain

2.1 Apprenticeships

Objective

To ensure high-quality apprenticeships which address the diversity, efficiency, and productivity requirements of the energy and utilities sector.

The Challenge

Employers in the energy and utilities industry have been in the vanguard of implementing the government's apprenticeship reforms since 2013. This can be demonstrated by their commitment to developing Trailblazer Standards, their determination to recruit a diverse workforce, and their engagement in delivering challenging but relevant approaches to the assessment and assurance of competence.

This work builds on employers' well-established investment in technical and higher level apprenticeships, their rigorous approach to recruitment and their determination to recognise and reward talent through structured career development.

Government apprenticeship starts target by 2020

In June 2015, the Government committed to 3 million additional apprenticeship starts by 2020. This is part of a plan to boost productivity, provide talent with increased opportunity to gain new skills, and employers with the opportunity to tackle longer-term workforce renewal challenges in addressing key skills gaps and shortages. More than 850,000 people were earning and learning on an apprenticeship in 2013–14, in 240,000 workplace locations across England[1] and the Scottish government committed to providing 26,000 Modern Apprenticeships in 2016 as a step to achieving their target 30,000 starts by 2020.

Addressing skills shortages through apprenticeships

The government's expectations of the industry, as set out in the National Infrastructure Delivery Plan, mark a step change in the need for a skilled workforce. The flexibility and opportunities offered by apprenticeship reforms now make this route a key driver and lever for reducing the predicted skills shortages.

There is a predicted shortfall of 28,000 people per year with engineering-related skills at Level 3 in the UK.

Accessing well-qualified young talent

The challenge for employers in the industry is accessing the small pool of well-qualified young people leaving the education system with an interest in engineering and the lack of understanding among educators and parents of the opportunities that the industry offers in comparison to other adjacent industries such as aeronautical, automotive and rail.

Without accessing the wider pool of talent or retaining existing apprentices and skills, employers will not be able to meet these skills demands as the recruitment pool will reduce year on year.

Recruiting young people (16–18 years old) onto training programmes and apprenticeships is key, but has always been a challenging area for the sector. The average age of trainees appears to be getting older, for example 43% of 'apprentices' in Distribution Network Operators in the power sector are aged over 25 years.

The apprenticeship and engineering brand

Raising the profile of vocational pathways versus academic pathways and ensuring apprenticeships appeal to more talented young people is an issue that is felt beyond our sector.

The sector needs to increase the attractiveness of engineering apprenticeships to reach young and older workers, those from diverse backgrounds and females or those that might opt for a traditional higher education route, especially as competition increases for talent in the apprenticeship space.

Addressing apprenticeship reform

The work of employers in committing to the Government's apprenticeship reforms has raised the profile of the industry and as a consequence their exposure to policy makers. The main challenge is how the reforms support our sector's business objectives. For fit-for-purpose career pathways, the sector must ensure that new standards are developed and existing frameworks (especially for the devolved nations) are kept updated.

1 www.apprenticeships.org.uk

Eligibility rules

Working with the eligibility rules associated with the current standards funding has restricted the sector in its approach to apprenticeships especially concerning age, where traditionally the sector has taken on older apprentices over the age of 24, due to the nature of the roles available, opposed to the defined 16–24 year apprenticeship age bracket.

The levy and rule changes now remove the age restrictions, offering incentives and opening up apprenticeships to existing employees as well as offering the opportunity for cross-skilling, reskilling and upskilling.

Access to quality training

As the average cost of taking on an apprentice is £76,000 but can be between £60,000 and £140,000 in our sector, employers need choice and access to appropriate training and support to deliver high-quality apprenticeships. A lack of quality training availability has in some cases prevented taking on apprentices.

Progress to Date

Good progress in growing the number and improving the quality of apprenticeships has been reported since the creation of the Skills Partnership and the government's Employer Ownership of Skills Pilot. 81% of those surveyed currently have apprentices in training, with a number of companies introducing apprenticeships for the first time. Two thirds of participants of the Employer Ownership Pilot, interviewed by Energy & Utility Skills thought that the number of apprentices in their organisation will increase over the next five years, with very few expecting numbers to decline.

The energy and utilities sector has always supported vocational pathways, as demonstrated in the two-year Employer Ownership Pilot, where more than 5,000 learners were supported in traineeships, apprenticeships and up-skilling programmes with 26% of these at apprenticeship level development and progression.

Official figures from national funding agencies show that there were 3,900 starts across 11 energy and utilities related apprenticeship frameworks in the UK in 2014–15. However, it is certain that these statistics under-estimate the total number of trainees taken on in the sector during that year. The reason for this is two-fold: firstly, sector employers take on apprentices on other frameworks, for example engineering, business administration – but official figures do not record the sector in which any apprentice is employed; and secondly, these figures only count the number of publicly funded apprentices on each framework; they do not count the extensive range of trainee-based development that goes on in the sector (e.g. company-specific, non-funded training such as adult trainees, reskilling and upskilling programmes).

Broader reach to talent

An increasing number of applicants aged over 19 years are being recruited onto apprenticeships, as more older people apply (previously it was very difficult for them to enter the sector via other routes if they did not have prior experience). The sector has also made a step forward in attracting more young applicants through targeted action.

Having an inclusive approach to recruiting and training apprentices is key, and training in unconscious bias for all involved will help achieve a step change in improving diversity in apprenticeship take-up.

Embracing apprenticeship reform

Employers are working collaboratively across the industry and its constituent sectors to put in place a sustainable framework for end-to-end recruitment, training and assessment of apprentices. This will give all employers confidence in each employee's capabilities and underpin the portability of the workforce between asset owners, operators and contractors. This continued approach will remove the need for the unnecessary duplication of training and respond to the gradual withdrawal of the Specification of Apprenticeship Standards for England (SASE) frameworks in England, encouraging each employer to trust in an individual's competence:

- **Trailblazer Standards in England**
  Progress has been made in England with the development of 11 new standards across gas, water, power and waste, as outlined in Table 2. The sector has led the way with at least 4,000 new starts, working to the new English standards, expected by 2020. The first 15 starters for any Trailblazer standard in England and across all sectors were presented their standards at the Palace of Westminster in July 2016. The first trailblazer programme approved in England in 2016 was devised by the power industry (Power Network Craftsperson), which will play a crucial role in filling skills shortages in essential overhead lines occupations.

- **Degree apprenticeships**
  Higher and degree apprenticeships offer an exciting new way to enter professional careers, as trainees can gain work experience while achieving a degree-level qualification. Today there are 75 higher and degree apprenticeships available, including foundation degrees, HNDs and full honours degrees. One power degree apprenticeship, (at Master's level) is being finalised for which businesses and up to ten universities are working collaboratively with the aim of producing more employable graduates. In Scotland new graduate level apprenticeships are also being launched, which is likely to generate a lot of employer interest as it has in England.

Table 2: Trailblazer Apprenticeship Standards.

Industry	Level	Apprenticeship Standard Name	Status
Cross-sector	Level 3	Maintenance & Operations Engineering Technician	Approved
Cross-sector	Level 3	Utilities Engineering Technician	Approved
Cross-sector	Level 2	Dual Fuel Smart Meter Installer (Electricity & Gas)	Approved
Gas	Level 3	Gas Engineering	Approved
Gas	Level 3	Gas Network Craftsperson	Approved
Gas	Level 2	Gas Network Team Leader	Approved
Power	Level 7	Power Degree Apprenticeship (MEng)	Assessment Plan in development
Power	Level 4	Electrical Power Protection and Plant Commissioning Engineer	Approved
Power	Level 4	Power Network Engineer	Standard in development
Power	Level 3	Power Network Craftsperson	Approved
Water	Level 3	Water Process Technician	Approved

Apprenticeship programmes will be restructured to meet apprenticeship standards and a new rigorous and robust approach to end-point assessment. This provides a unique opportunity for employers to address their own skills shortages with integrity. The EUIAS is central to helping employers better prepare for and understand the opportunities that these developments and reforms provide. By owning and delivering to the standards required through the reforms, employers will be better placed to use the opportunities offered by providing training and more effectively gain the skills they require. Ownership, along with the involvement of EUIAS, will bring the confidence in training and competence the sector needs, as well as set standards on a par with other sectors.

➔ The sector will continue to embrace apprenticeship reform across the UK and work to ensure that it is fit-for-purpose and increases the overall qualified talent pool required by the sector.

Valid vocational pathways with strong earning potential

Apprenticeships are vital to our sector as we continue to grow our own talent. Ultimately apprenticeships will be able to compete with traditional academic routes to employment. This is highlighted in a 2016 report by Barclays and the Centre for Economics and Business Research (Cebr),[2] which states that the average gap in lifetime earnings potential between apprentices and graduates was just 1.8%, with the highest salaries gained by those people completing higher level apprenticeships (Level 4 £29,500; Level 5 £39,500). Findings also saw average earnings of employees with NVQ Level 5 surpassing the starting salary of graduates.

In 2011 average salaries while in training for most energy- and utilities-related apprenticeships were higher than the average salary of all apprentices (£12,634 p.a.). In the same year, apprentices on the Electricity Industry framework earned £13,376 p.a., while apprentices on the Gas Industry framework earned £14,167 per year. On the Water Industry framework an apprentice earned, on average, £15,930 per year.

Furthermore, the retention and continued employment of energy and utility apprentices is higher than average. On average, 95% of completers of Electricity Industry apprenticeships were still with their employer five years after completing their training, compared to 88% of all private sector apprentices.[3]

Although the cost of recruiting and training an engineering-related apprentice can be higher than other forms of apprenticeship, the productivity gain associated with completing an engineering apprenticeship is almost twice as high as the average for all apprenticeships (an additional £414 per week compared to in 2012–13 an average of £214).[4]

Plans to 2020

We will commit to improving the value and quality of apprenticeships in the sector in order to fulfil the expectations of the National Infrastructure Delivery Plan and deliver continuous improvement of customer service.

To do this we will:

Leverage the levy: The sector will use the introduction of the levy to build coherent and consistent approaches to workforce development including the wider supply chain. For example, utilities contractors will seek 83% of their new recruits direct from the marketplace (compared to just 26% in the asset owners), where due to the nature of their business, all trainees' entry routes will supply just 4% of new recruits for tier 1 contractors, compared to 44% in the asset owners. The challenge is to increase training opportunities within the supply chain.

Understanding the impact of the levy for the devolved nations is key especially with the current uncertainty on how funds will be used and accessed for the devolved nations. This may present some challenges for employers that operate across borders in terms of their UK-wide skills strategy and approach to apprenticeships and how they may reclaim their levy subscriptions.

2 http://newsroom.barclays.com/r/3385/apprentices_can_earn_up_to_270__more_over_their_lifetime.

3 Incomes Data Services (2011), 'Apprentice Pay and Conditions'.

4 CEBR. (2013). Productivity Matters: The Impact of Apprenticeships on the UK Economy. London.

Build on professional recognition schemes: Apprentices should be able to expect professional recognition from their relevant professional body, demonstrating that the status of the apprenticeship is on a par with academic qualifications.

It is essential that the work already started continues with the professional engineering institutions to ensure Trailblazer standards align with professional standards.

The sector commits to supporting professional recognition of apprentices through continuing support for the EUIAS governing body and the National Skills Academy for Power.

➔ The Skills Partnership will continue to build a strong, sustainable relationship with the Engineering Council and the professional engineering institutions based on a common commitment to professionalising the workforce and to quality vocational training.

Build quality apprenticeship capacity and capability

The sector will continue to build capacity and capability by taking a leading role in the development of training, assessment and assurance practices across their workforce. In order to do this through apprenticeship routes, the sector will need to focus on ensuring appropriate technical and non-technical standards are in place to provide progression at all levels.

Technical skill sets are no longer just about traditional engineering but now cover new and emerging technologies. Employers must also be prepared for increasing competition for skills as they now need to have skill sets that are relevant across a number of sectors. For example, SSE are supporting the development of the cyber security apprenticeship standard to help address the skills gap in three critical risk areas identified by government: energy, transport and finance.

➔ The sector will continue to encourage employers to work together to develop new apprenticeship standards to address skills needs. This will include the continued work in building vocational pathways to support progression, providing an alternative source of higher-level skills, for example higher apprenticeships and degree apprenticeships (a Power Engineering Degree has already been developed).

➔ Enable employers to have equal opportunity to access high-quality training and development from the best colleges and providers through the EUIAS affiliate programme.

The sector will continue to respond to new policy developments from government to ensure business needs can be met and the delivery of the NIDP can happen through investing more in apprenticeships.

Provide leadership on best practice

Our sector is committed to delivering high-quality apprenticeships giving confidence about the competence of the workforce within a safety critical environment.

➔ The sector will ensure that all apprenticeships follow the best practices found in the industry including a real job, a fair salary and opportunities for progression on completion.

➔ We will establish the EUIAS as the de facto assessment partner of choice for energy and utilities employers and increasingly those operating in adjacent sectors.

To really lead on best practice we must continue to build on sector success and actively promote apprenticeships to other employers in the sector by sharing best practice and case studies.

Access diverse talent pools:

The sector will be inclusive of all talent and will continue to focus on attracting young people into the talent pool and onto apprenticeship programmes as well as ensuring older talent is attracted and retained. Key focus areas for the sector will include:

➔ Engage with the implementation of educational reform (including the Sainsbury review in England), on technical education and work with schools and colleges to provide a talent pipeline of young people.

➔ To build a pathway into apprenticeships through traineeships and other pre-employment programmes.

➔ To establish better links with employment agencies, organisations, Local Enterprise Partnerships (LEPs), career services in key recruitment locations to make sector opportunities more accessible and appealing.

➔ To create diversity in apprenticeships supporting the government initiative of a 20% increase in BAME apprentices by 2020.

Case Study: Supporting Apprenticeship Investment in the Supply Chain

Background

ScottishPower, along with its supply chain, collaborated with Energy & Utility Skills through the TalentBank service to recruit and train overhead lines apprentices.

Challenge

The overhead linesperson was recognised as a global shortage occupation and approved by government for inclusion on the Migration Advisory Committee (MAC) list. As an asset owner, ScottishPower recognised the potential impact this might have if not addressed across its own supply chain. Additionally, ScottishPower recognised that they did not have sufficient resource to train contractor apprentices at their training centres.

Action

Although ScottishPower continued with its annual apprenticeship intake, in order to support its supply chain and ensure a viable cohort, it contributed an additional 20 learners as a way of 'over-training' for the future. Along with learners from Grosvenor Power and Powerteam, these were employed directly by TalentBank. Learners remained with their sponsor, with TalentBank providing an HR and payroll service for the duration of the apprenticeship.

Outcome

The resulting collaboration with five of ScottishPower's supply chain (Powerteam, Amey, Freedom Group, Grosvenor Power and Electricity Network Solutions) saw the creation of an apprenticeship cohort of 74 learners on an initial Level 2 apprenticeship, with some progressing to Level 3, in power distribution (Overhead Lines pathway). ScottishPower was impressed with the calibre of the candidates.

"This TalentBank scheme has for the first time enabled the power contractors to recruit and employ apprentices. Contractors have not had the infrastructure in the past to manage and assess apprentices, believing that apprentices could not deliver the work required in the time frame allotted.

This is a big step forward for contractors and ensures that the asset owner, ScottishPower, can be assured that the supply chain has the highly skilled staff to maintain its network."

Ronnie Moore, National Skills Academy for Power

Case Study: United Utilities – Trailblazers

Background

The sector is working to address and improve its apprenticeship provision. The government backed pilots and Trailblazers provided employers with the opportunity to take ownership and design apprenticeships that work for them. The sector is also recognising achievement at apprenticeship level, rewarding hard work and excellence, and helping to retain existing talent.

Challenge

The sector faces a big challenge: skills gaps and an ageing workforce, so employers need to look beyond traditional methods of recruitment. Businesses recognised that there were gaps in the existing apprenticeship frameworks and that the provision on offer did not meet their business needs. The Energy & Utilities Skills Partnership identified that many smaller employers do not employ apprentices because they do not have time to engage with training providers or identify the best products, or simply do not know how to recruit and train apprentices. There was also too much bureaucracy, especially for employers who do not have dedicated training or HR teams.

United Utilities – helping life flow smoothly

Action

The water industry had existing apprenticeship frameworks in place, but employers felt these were not fit-for-purpose. Through the Energy & Utilities Skills Partnership two new Level 3 Apprenticeship Trailblazers were developed – Water Process Technician and Utilities Engineering Technician. The technical training and qualifications were delivered by the Training Provider, UCT in Manchester.

Outcome

There are now 62 apprentices training to be either Water Technicians or Utilities Engineering Technicians, across three water companies.

"The programme was a great success. It delivered high quality training, provided a valuable boost of additional apprentices into our sector and has left a legacy of external training provision with UCT for future apprenticeships."

Stephen Kelly, Workforce Renewal Manager, SP Energy Networks

Case Study: Recognising Achievement – Siemens Female Apprentice Wins Award

Background

The sector is actively recognising achievement at apprenticeship level, rewarding hard work and excellence, helping to retain existing talent.

Challenge

There is evidence to suggest that the power industry struggles to retain skilled workers. It is estimated that 12,000 people will leave their jobs through normal staff turnover between 2016 and 2022. Employers will need to provide 4,800 jobs through internal promotions and upskilling in this period. (Source: NSAP Workforce Planning research results 2016)

SIEMENS

Action

At the 2016 People in Power Awards, Stephanie Hargreaves of Siemens won the award for Power Apprentice of the Year. Stephanie is the very first higher level apprentice in the Siemens Subsea business. As a Higher Apprentice in Design Engineering, Stephanie's role is to learn and understand the various systems Siemens have in place in order to become a successful Design Engineer.

Outcome

Stephanie's managers cite her as an inspirational example to both potential female engineers as well as all current apprentices. She won the award in recognition of her enthusiasm and dedication, which is demonstrated through her high-quality work. Stephanie also received praise for additional non-technical work such as the creation of a new Apprenticeship brochure and her work as a STEM Ambassador in the community, helping to inspire young people about careers in the sector.

2.2 Maximising the Value of the Apprenticeship Levy

Objective

To maximise the value for sector employers from the introduction of the apprenticeship levy.

In a bid to help employers across sectors tackle skills shortages with a surge of apprenticeship talent, the government has committed to introduce a new apprenticeship levy in April 2017.

The levy will require all UK employers with a wage bill of over £3 million per annum to pay 0.5% of their wage expense to HM Treasury via PAYE in order to fund apprenticeship training and help government meet its target to see three million new apprenticeship starts by 2020.

The energy and utilities sector supports the overall aspiration of the levy in that it wholeheartedly backs the promotion of vocational routes into employment.

The pace and volume of levy policy changes will need to be carefully managed to facilitate the best and most sustainable outcome for the sector. The government's proposed industrial and productivity strategy, which is being designed to meet the specific needs of industry and UK Plc, will also have an influence on employer take-up and the implementation of the levy policy.

Therefore, the challenge for the sector is to ensure that the levy funds are used to benefit training within the sector and the supply chain – with a particular focus on resolving skills gaps and shortages.

The Challenge

The energy and utilities sector will ensure that it is able to take advantage of the levy funding to help address the skills shortages and challenges that exist in the sector and supply chain.

The Government's levy policy

The Department for Education (DfE) is overhauling the whole apprenticeship system to secure a significant step change in the scale and quality of apprenticeship programmes, how they are funded and how they make a greater contribution to economic performance and social mobility.

On 25 November 2015, the Government announced, in its Spending Review and Autumn Statement, the introduction of a UK-wide apprenticeship levy from April 2017. The proposed policy combines two government interventions: mandating funding (via the levy), by incentivising businesses to take on apprentices (via a subsidy on training, funded through the levy).

At the same time the Government committed to securing a target of three million more apprenticeship starts during the current parliament.

The operation of the levy within the devolved nations still requires clarity, particularly for those employers who operate cross borders. As responsibility for apprenticeship policy, practice and funding is devolved, each country will decide how it spends any allocation it receives from the levy receipts on apprenticeships. In England employers will be able to draw down funding for their apprenticeships via the Digital Apprenticeship System (DAS) and Government has said that there will be an opportunity for employers to 'get more out than they put in' through a top-up to their digital account. All employers will receive an allowance of up to £15,000 per annum to offset against their levy payment. This allowance will mean that fewer than 2% of UK employers will pay the levy.

Progress to Date

Sector Levy Advisory Group

The Levy Advisory Group is a UK-wide group of companies that was established in Summer 2015, and is built to be representative of the energy and utilities sector. To date its work has focused on ensuring the sector understands the impact of the levy and is updated in a timely way to support business decision making. The group will continue this work by:

- Conducting a review of apprenticeship levy policy and understanding the impact it has on the UK-wide energy and utilities sector
- Being the 'sector voice', promoting the UK energy and utilities sector's needs and requirements
- Informing levy policy and directly enabling and assisting successful transition from policy to practice
- Assisting the energy and utilities sector to work in collaboration to get the best outcomes possible from the levy

Policy work
Energy & Utility Skills has kept all employers closely engaged in the detail and implications of the developing policy, influenced central policy makers and facilitated employer consideration of how the levy can best benefit employers individually and collectively. The key outputs include:

- Over 200 relevant information and policy summaries
- Events including UK Treasury and UKCES representatives
- Collaborative cross-sector approach to addressing key concerns and influencing relevant stakeholders
- Opportunities to directly engage with devolved nations officials
- Library of collateral to support members across the UK with the implementation of the levy

Plans to 2020

To work with DfE and equivalent in the devolved nations to ensure the levy supports the sector's ambitions around closing our skills gap, through more diverse and professional apprenticeships. In moving to higher-level skills, the role of upskilling the existing workforce is also important. Key objectives over the next three years include:

Maximise skills investment – using the apprenticeship funds appropriately
Apprenticeships are vital to the sector but form just one part of employers' workforce needs. Therefore investing in apprentices for the current and future business, sector and infrastructure requirements is a consideration for employers.

One of the key challenges employers are encountering is how to align the sector's requirement for specific skills to deliver the government's NIDP with the more general pressure to fully utilise their levy funds. While the policy states that training is under-invested, it is not so in our sector; we buck the trend. Energy and utilities employers' total training expenditure has increased from £0.3bn in 2013 to £0.7bn in 2015. Expenditure per person trained is £4,000 and per employee is £2,300; both figures are above the national average. Some 88% of the training provided by companies was primarily job specific while only 21% of the training led to a recognised qualification.

Therefore, a key focus for the sector is to balance the external pressure created by government to recruit and train apprentices with their business requirements, and the training needs arising from their own workforce planning.

➔ To track and evaluate the outputs of the skills investment in apprenticeships, in terms of starts, completions and progression, against identified skills gaps and shortages, to help evaluate the impact of the introduction of the levy on skills development in the sector. This includes working with DfE and the devolved nations to ensure the levy supports the sector's ambitions around closing the skills gap.

Be ready for when the levy goes live in April 2017
By 2019–20, the levy is expected to raise £3bn from employers in the UK. As skills policies are devolved to the Northern Ireland, Scottish and Welsh Administrations the means by which employers based in these countries will be able to use their levy payments remains unclear.

➔ The focus for the sector is to understand how the levy will work for each nation as well as for UK-wide businesses with minimal disruption to business as usual.

Employers will be expected to secure funding for their apprenticeship programmes through their digital account, which is based on an electronic voucher system. The precise details of how this account will work and the technology requirements of employers has yet to be made available as the system is currently going through development trials.

➔ We will support all employers in the sector to access and use the Digital Apprenticeship Service to manage and distribute funds.

Sector working collaboratively – use unspent funds for the company supply chain and sector
The DfE is aware that some employers will want to use the funds in their digital account to pay for the apprenticeship training of other employer's apprentices, for example, someone working for an employer in their supply chain. In recognition of this approach they have proposed that employers could transfer up to 10% of their funds to another employer's digital account from 2018.

➔ We will position the energy and utilities sector so that it is able to use the supply chain flexibility as soon as possible. Consideration will be given to offering to pilot such an approach for DfE.

➔ The energy and utilities sector will raise awareness and engagement among SMEs and non-levy paying employers, continuing to look for ways to make it easier to employ apprentices.

Shape and define an apprenticeship policy for the devolved administrations

Employers in the energy and utilities sector operate across the UK. The continued divergence of skills policies is increasingly acting as a barrier for consistent and coherent investment in workforce development.

While the levy will be raised from all UK companies, the only detailed information available on how employers can access funding for apprenticeships programmes from April 2017 relates to England. The challenges facing employers arising from disconnects of skills policies across the UK is significant. Given that the levy is charged on an employer's UK pay roll but the only information available is on headline practices in England, the effective and efficient implementation by business will be difficult to achieve in a timely manner.

➔ Employers will work together and with government officials to ensure a robust understanding for UK-wide implementation.

The status of National Occupational Standards (NOS)

In England the Government has become solely focused on new Trailblazer standards for apprenticeships to the exclusion of NOS. However, the devolved administrations remain committed to retaining NOS as a fundamental pillar for specifying, developing and measuring workplace competence. As NOS remain at the heart of most training programmes, including apprenticeships, the issue is that companies which function across borders are likely to have to manage increasingly different apprenticeship standards as well as wider workforce training specifications and requirements.

➔ The sector must understand the outputs of the NOS / SASE framework consultation, ensuring enough standards are in place to cover progression pathways from Level 2 upwards.

Manage the potential impact of the levy on apprenticeship quality and the capacity of the supply side to meet demand

In England the financial returns of using the levy to deliver apprenticeship programmes underpinned by the Trailblazer Standards are far greater than that of existing apprenticeship frameworks (SASE). This disparity is intended to encourage employers and providers to switch to the new standards as quickly as possible. The introduction of the levy must ensure that:

- Quantity is not achieved at the expense of quality
- Training provision meets the requirements of asset owners, supply chain companies and SMEs
- The process is not bureaucratic or cumbersome for employers to become training providers
- The levy introduction enables employers to have more involvement in the design of apprenticeships and also choice over apprenticeship training and assessment including delivery of their own provision
- Any gaps in training provision are effectively delivered by training providers in the sector
- Government technical vocational education reforms are linked to and embedded

➔ We will work together to define the future standards required by employers at a sector level, starting with an analysis of current status on standards and a future state needs assessment to help address the career pathways required to respond to our future technological needs.

2.3 Traineeships and Trainees

Objective

To provide an assured route for talent to enter the sector and for employers to be confident that they are job ready.

The Challenge

Creating flexible entry routes for different types of talent is vital to our sector.

- **Recruiting young people:** Our sector has traditionally faced problems in recruiting 16–18 year olds
- **Challenges of managing younger harder to reach candidates:** Ensuring a fit-for-purpose management structure for pastoral care, an area where support needs can be underestimated
- **Creating a sustainable recruitment channel:** Understanding and ensuring return on investment (ROI) in recruiting and developing trainees to being productive.

Progress to Date

The energy and utilities sector is committed to using the trainee route to help bring new talent, both younger and older workers, into technical and non-technical positions.

Harder-to-reach talent pools including NEETs
The Skills Partnership piloted new ways of working with the development of a regional pre-employment programme for NEETs aged 16–24, starting in the North West of England in September 2014. The pilot, led by United Utilities, involved seven power, water and waste management employers. It has since been rolled out to four other regions in England, with British Gas, UK Power Networks, Siemens and Northumbrian Water each taking a lead.

Traineeships in England
Government-funded traineeships were introduced in 2013 to help unemployed 16–24 year olds in England to prepare for a job or apprenticeship programme within 6 months. Traineeships have been increasing across the sector and there is the potential for a network of employer and trainee champions to spread best practice.

Company trainee entry routes
Our sector supports trainee positions that provide flexible entry routes for other target groups (including older workers looking to retrain) and invests in bringing in new talent through non-funded routes. There are a number of examples of best practice in the power sector where programmes are designed to upskill from one level to the next on an Engineering pathway.

Plans to 2020

➔ The sector will continue to share best practice and to work collaboratively at a regional level in line with business needs as well as continuing to invest in their own company trainee schemes.

Case Study: E.ON Customer Service Traineeships as a Route to Apprenticeships

Background
E.ON established a Customer Service Traineeship to give young people aged 16–24 the opportunity to embark on a career in the sector, while addressing their own recruitment needs.

Action
Selected candidates take part in a seven-week traineeship programme, with ten successful candidates progressing onto a formal Customer Service Apprenticeship for 12 months.

Outcome
Now into cohort 8, a total of 114 applicants aged 16-24 have completed the Traineeship. Since the first cohort in July 2014, a total of 57 have progressed onto the Apprenticeship. Diversity of applicants has also been positive. Of the 114 applicants, 53% have been female, 32% from BAME backgrounds and 5% stated they have a disability.

Holly Whelan, one of the young people who was part of the first cohort said:

"When I found out about the Traineeship at E.ON, I applied straightaway as I knew what a great opportunity it would be – and has been. I have enjoyed learning new skills every day, seeing how E.ON operates and being able to have an insight into the work that is done."

2.4 Graduates

Objective

To ensure that the sector is able to attract high-performing graduates to the sector.

The Challenge

Attracting and retaining graduates across the sector: Attracting graduates from outside the sector or retaining 'home grown' graduates can be a challenge for all except the big players.

Visibility of our sector and the attractive opportunities: The lack of visibility of the opportunities on offer within the sector, low awareness of the entry routes as well as low awareness of the career progression available makes it difficult to attract graduates or retain those already employed in the sector, even those that are part of industry graduate schemes. Therefore, graduates often use the sector as a 'stepping stone' to careers and jobs they feel to be more attractive or desirable, often outside the industry. Largely because progression routes are not clear or, as research by the power sector has shown, graduates do not know how their qualifications can be used within the sector, they leave and the sector loses valuable skills.

This is clear when we consider the fact that fewer than 5% of engineering graduates are employed in the energy and utilities sector. With a further 5% entering civil and engineering construction activities, this compares poorly to the 10% of STEM graduates that enter the retail sector, for example.[5] Therefore there is a market failure in the matching of supply and demand for STEM graduates in the UK and, while there is evidence to suggest this under employment of STEM graduates applies across Europe, it is particularly prevalent in the UK.

A significant contributing factor in this competitive challenge for graduates is the sector's inability to match the salaries offered elsewhere in the UK economy. As competition for talent continues to escalate, there is a very real danger that the escalating cost of labour will prove unsustainable for energy and utilities employers.

Shift in graduate recruitment: Historically, our sector has had a multi-channel approach to graduate training and recruitment, using both higher apprenticeships and traditional employer sponsored graduate programmes to develop the skills required. Increasingly, employers in the sector are taking the challenging route of developing 'grow your own' degree qualifications to tailor skills learned to specific requirements and partnering with universities to do so, as well as adopting more flexible delivery models such as with the pay as you earn type approach of the degree apprenticeship developed by NSAP.

Progress to Date

Across the entire UK economy, 58% of labour demand will be at Level 6 or above (i.e. requiring a degree), with gas and power having higher than average demand at 62%, the water sector 57% and the waste management and sewage sector needing significantly less at 39% and 37% respectively.

The energy and utilities sector has always offered a diverse graduate programme covering technical, management and scientific pathways and those skill sets will remain in high demand, despite the difficulty experienced in sourcing them. Employers in the sector have recognised the growing need for qualifications to meet their specific needs and are the key driver of the industry degrees developed by the likes of IET Power Academy, and the degree apprenticeship, developed by NSAP. Studying for these qualifications will supply graduates with a very particular set of electrical engineering skills, which the sector and other industries are in real need of; they have the backing of, among others, National Grid, Rolls Royce, E.ON and Northern Powergrid. They are also intended to address the loss from the UK of some of these advanced core engineering competencies as a result of research and development moving to a global stage.

In addition, the sector is increasingly recognising that it needs graduate level skills in roles beyond engineering, technical and sciences. However, since these commercial skills are non-sector specific, including IT, leadership & management, accounting and project management; suitable graduates are also proving just as difficult to recruit and retain long term in this increasingly competitive marketplace.

Diversifying recruitment

With the decline in the uptake of STEM and technical subjects at schools, employers are increasingly starting to recognise the need to source candidates for graduate levels beyond the traditional talent pools and apprenticeship entry routes and look to wider ranges of disciplines. While the demands for higher skills in these areas will remain, the sector is working to 'remap' training and recruitment plans to diversify how they source employees to meet them and prevent skills shortages impacting further.

5 HESA 'Destination of Leavers Survey and Student record 2013–14'.

Leadership programmes

Developing leadership skills has always been crucial for the industry, not only to provide the higher leadership skills needed to drive business but also to offer attractive in-house progression routes for graduates. Some in the sector are leading on this with, for example, the Aston University's Master's Degree in Engineering Leadership and Management, a qualification targeting engineers who wish to transition to more senior leadership and management roles. These programmes now need to be developed beyond just engineering into other technical and non-technical roles and programmes in order to provide the breadth of leadership required.

Plans to 2020

To address the wider attraction and retention issues, we need to develop and present a consistent picture of our sector right from early interactions at school onwards, ensuring we help target groups see where they could fit into our sector and use degree level skills.

Sector collaboration pilot. Following research in the power sector on graduate perceptions, a pilot programme will:

- Give consistent key sector messages adapted for different audiences
- Share sector activities and best practice with a bank of shared material
- Further establish working relationships with universities to support learning and prepare students for work with greater links with university careers services
- Join up with professional engineering institutes, specifically IET and the automotive sector to support promotion and development of engineering skills and qualifications for industry
- Once the pilot is complete, share lessons learnt across the whole sector, feeding into the sector identity

Degree apprenticeships

So far in our sector there is one approved degree apprenticeship, a Master's in engineering for power which will be rolled out with the ten participating universities and employers in the sector who developed the standard. Beyond the planned intake for the 2017–18 academic year, this qualification, as well as the delivery model of 'pay as you earn' will be promoted to other employers in the sector and to the wider engineering sector too, for whom this will be extremely relevant and supply skills already identified as required in the UK. This will then complement the existing graduate training programmes run by employers.

➔ Over the coming years the sector will assess the need for other relevant degree apprenticeships.

Ensure a positive candidate experience

Providing a platform and mechanism to share high quality, but unsuccessful, job applicants ('silver medallists') will enable the sector to grow its talent pool while also ensuring the following:

- Greater cooperation between large employers, who are able to attract applicants, and their supply chain, who struggle to attract sufficient applicants for their roles
- Keeping graduates motivated to join our sector by seeing the opportunities in our sector, the sector will, where possible, refer silver medallists into Talent Source Network
- Career pathways and opportunities that are clear to students especially with the increasing trend to grow your own graduates through the apprenticeship route. Job roles and qualification mapping will help highlight entry points for graduates to the sector, giving them visibility of job roles and the scope of opportunity open to them
- Better retention of graduates within the sector through matching expectations with reality and recruiting into the right roles at the onset

Case Study: Power Graduate Research and Activity

Background
Power industry employers have reported issues with attracting graduates and their employability. As a result, employers have collaborated to create the Graduate Activities Group to identify what they have been doing individually and sharing best practice.

Challenge
A number of potential problems facing employers have been identified in relation to recruitment of graduates into the sector. After surveying a number of sector graduates in existing roles, feedback suggests that there is confusion about the large number of employers in the sector and what they do. There is also little understanding of the vast selection of roles available and graduates have difficulty relating their degree to those roles and have pre-conceived ideas about working in the sector. The sector misses opportunities to engage with graduates while at university and engagement needs to start at primary school level. Consistent key sector messages adapted for different audiences are required.

Action
Power industry roadshows have been delivered by industry graduates at universities in conjunction with the Institute of Engineering and Technology (IET) to explain the sector and the types of role available to graduates. A power industry mentoring scheme is in development and will be piloted within some universities. Company graduates are becoming mentors and will help students better relate to the industry.

Outcome
So far, Power Sector Roadshows have been well received. Five have been delivered, with more planned for 2016–17. The Mentoring Scheme pilot is being finalised and will be ready for commencement in 2016–17. Additional graduate research is being undertaken by employers.

"I have been involved in the Power Sector Roadshows from the first pilot representing distribution. I have spoken to many students and explained about my background and role, to enable them to see where they might fit in. All the graduates who deliver the Roadshows have different backgrounds and therefore can engage with the breadth of students who have attended. It has been a great experience and enables me to promote a sector I am passionate about and believe in."

Phil Dixon, Project Engineer, Northern Powergrid

2.5 Retraining, Upskilling and Retaining a Professionalised Workforce

Objective

Ensuring a professionalised workforce necessitates routes for skills development including professional recognition, cross-skilling and upskilling opportunities for existing talent. Reskilling those from other sectors and talent pools is critical to ensuring that we have the appropriate skills and competence to satisfy current and future operating requirements. This will support sustainable businesses within our sector.

The Challenge

Coupled with retention and development, the upskilling of our workforce is required, to give us the flexibility needed for technological change – from data demands, energy storage and SmartGrids to the circular economy shift while maintaining consumer trust in our sector's delivery.

The main issues we are looking to address include:

- **Reskilling and upskilling the existing workforce:** Up to 90% of the current UK workforce will still be employed in the next decade, so reskilling and upskilling workforces with the relevant skills is vital to maintaining competitiveness and sustainability.[6]

  The impact of technology is changing the skills requirements of the energy and utilities workforce, since many of the needs are known but many technologies are yet unknown. As technology progresses, the skills needs are changing and some skill set are now becoming priorities, especially around areas such as cyber security. As set out in the Chancellor's speech at GCHQ in November 2015, ensuring the UK remains a world leader in cyber security is a key government priority. This is now a sector priority requiring trained and certified professionals to address new areas of risk.

  Other acute skills shortages, resulting from national infrastructure projects with tight deadlines, also require the reskilling of the workforce. The roll out of smart meters is a prime example of this. The programme currently represents the sector's largest infrastructure project and will require the creation of around 10,000 new smart meter installers by 2020.

- **Ensuring understanding and flexibility of entry routes, enabling access from other sectors / talent pools:** Lack of insight into how to access suitable skills from other sectors and the associated entry routes leads to inflexibility in approach. Our sector is seeing workforce skill gaps in areas that have common competencies.

- **Retaining talent once engaged:** Overall workforce churn in the energy and utilities sector is low, at an average of 3–4%. The high age profile of the utility asset owners in particular is the product of very low staff turnover in the regulated energy and utilities sector – generally around 3–5% per year compared to around 10% per year across all sectors. The employment environment is currently very stable. However, this will change with new generations. The same cannot be said for the sector's supply chain where workforce retention is already a major challenge. Turnover in this part of the sector can reach 18–20% per year and peaks in workforce shedding – both voluntary and involuntary – are seen to be linked to the cycles of economic regulation that have caused significant peaks and troughs in labour demand among suppliers and contractors. Equally, many aspects of the supply chain workforce are extremely price sensitive, so movement of workers around the contractor community is commonplace.

- **Communicating our sector's career pathways to different generations:** As career ladders are no longer linear, the pathways mapped currently may not meet the expectations of newer generations of employees such as millennials and Generation Z. We must continue to align our careers to professional engineering institutions (PEIs) to ensure professional development, producing sustainable careers.

Progress to Date

Growth in the energy and utilities sector means that there are rewarding career opportunities for people thinking of moving into our sector. Research by the London School of Business and Finance found that 47% of the UK workforce would like to change their current career.[7] This presents an opportunity for our sector if supported by career pathways that demonstrate transferability of skills.

6 UKCES (2014), 'Growth through people'.

7 London School of Business & Finance (2015), 'LSBF Careers Report'.

Addressing current and future cross-sector competency needs

Research by Energy & Utility Skills in 2014 has highlighted reskilling and upskilling opportunities for our future workforce. It is expected that there will be more competencies that are common across sectors and therefore skill sets that are fully transferable from other industries.

- **Common future role knowledge requirements include:** risk management, asset management, data analytics, pricing and incentives, real time monitoring, contract management, stakeholder management, quality management, personal knowledge management and risk-based modelling.

- **Common functional cross-sector competencies that are also fully transferable include:** project management, commercial awareness, supply chain management / logistics, leadership and development, customer service management, environmental and social governance, and e-skill / technology for the future workplace.

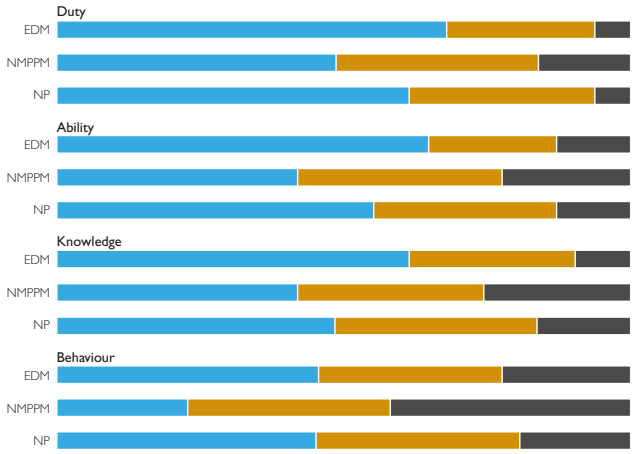


Figure 4: Future Roles for the 'Gas Network Planner' example. Source: Energy and Utility Skills (2014), 'Foresight: Making the Transition', p.51.

- **Application to our sector:** Examples of how this applies to the sector include: in the waste industry, new competencies in relation to markets, brokering and value stream management as well as a deeper understanding of regulations and environmental and social governance; in water and waste, there are significant gaps in workers' understanding of the nature of chemical and biological processes, and environmental risk management.

Mapping existing roles to future roles

One example is highlighted in Figure 4 that demonstrates the gaps we are trying to address, by mapping existing roles to future roles for the 'Gas Network Planner' role to a selection of existing gas industry roles, illustrating key gaps that exist and the need for up-skilling the existing workforce.[8]

Brief explanation: The 'future' Gas Network Planner role was mapped to the three identified feeder roles of (current) Network Planner (NP), Energy Demand Manager (EDM) and Network Maintenance Planning and Performance Manager (NMPPM). The red bar represents the gap, the green the overlap and the yellow the discrepancy (not required) between the required competencies of current 'feeder' roles and requirements of the future role in question. Here we can see that there are currently significant competency gaps between the existing 'feeder' roles analysed and the 'future' role.

Understanding both skills gap role attractiveness and the technical and behavioural competency requirements is a challenge that we have to resolve.

ManpowerGroup talk of 'teachable fit' where individuals who hold a number of the skills required and who (because of their background and / or other transferable skills) are trainable, willing to learn and can be rapidly developed in a cost-effective way.[9]

➔ The sector is committed to reskilling and upskilling current and potential new employees looking at their 'teachable fit'.

A great challenge for the sector is the energy smart meter roll-out. Employers and government have collaborated to explore the requirements for upskilling, cross-skilling and the retraining pathways required to meet the peak demand of an extra 8,000 smart metering professionals by 2018–19. The added challenge of retaining the existing smart professionals, avoiding excessive wage inflation while putting customer safety at the heart of the programme can only be achieved by broadening the talent pool. Retaining the workforce beyond the 2020 deadline is being considered as is the reskilling programme for surplus smart meter workers when the programme ends.

Reskilling and upskilling existing workforces across the sector

The sector has focused on upskilling its workforce through a wide array of programmes from specific technical skills development to supervisory programmes.

Organisations are continuously reviewing skill sets across their own businesses to assess where there might be potential to reskill from within the company, for example SSE have transferred people from their tree-cutting unit to be trained as overhead lines workers. Some employers in the water sector have struggled to recruit reservoir supervisors from the marketplace. Yorkshire Water have responded by developing an internal talent pool to enable them to reskill employees from other roles. Ongoing high risk skill set shortages should be targeted and transferrable, multi-skilled task forces that migrate around the business to respond to specific resource demands.

8 Energy and Utility Skills (2014), 'Foresight: Making the Transition', p.51.

9 ManpowerGroup (2010), 'Teachable fit: a new approach for easing the talent mismatch'.

Transferable skill sets from other sectors

Our sector has been innovative in how it has looked at core competencies within its own organisation as well as from other sectors. There are a range of examples of how the energy and utilities sector has trained people from elsewhere including service leavers, oil and gas and advanced manufacturing.

The oil and gas sector is currently reducing the size of its workforce and this is creating valuable skilled resource for our sector. The skills and experience of oil and gas sector workers involve working on significant infrastructure developments in safety critical environments, managing large networks of stakeholders and suppliers. These skills are highly relevant to our employers. The renewables sector has a strong track record of transitioning workers across from the oil and gas sector: for example, the Greater Gabbard Offshore Wind Farm, operated by SSE, has 40% of employees originating in the oil and gas sector.

Plans to 2020

Upskill existing workforce

With an ageing workforce and loss of talent over the next ten years, the retention and systematic upskilling of the existing workforce is critical. Over the next five years 10,696 internal moves will be made across the power and first tier utilities contractors where asset owners have a heavier reliance on retaining and moving internal talent into new positions (30% of their workforce demand is fulfilled this way compared to 15% in the utilities contractors).[10]

The use of occupational frameworks to upskill the existing workforce for technical and non-engineering pathways is possible, e.g. IT, procurement, quantity surveying, higher level apprenticeships (Levels 4 and 5) and degree apprenticeships (Levels 5–6) and Master's degrees (Level 7).

➔ Continued investment in reskilling and upskilling the workforce is a priority for the sector.

➔ The ability to develop transferrable, multi-skilled task forces to address hard-to-fill / high-risk roles to migrate around their businesses to respond to particular resource pinch points is a way forward for the sector.

➔ The sector will continue to map its careers to PEIs to ensure alignment of professional development.

10 Energy & Utility Skills workforce planning.

➔ The sector needs to ensure that it remains able to meet the personal employment aspirations of their workers; for example, facilitating flexible work patterns for those who might be considering retirement and enabling those wanting to progress to see clear routes for doing so.

Retain outplaced talent in the sector

Retaining and retraining outplaced talent in our sector is vital. Talent Source Network – the sector talent pool, will help secure talented people within our sector by having more opportunities available to them. The network is developed and being used to attract talent, but is not yet being used as part of an outplacement process.

Address current and future cross sector competency needs

To address the changing future needs of the sector and competencies required in our workforce, the sector will need not only to upskill and cross-skill its existing workforce, but also retrain people from other sectors where transferable competencies apply through clear transition pathways. Key focus areas must include:

➔ Ensuring appropriate upskilling (promoting an existing employee into a skill set at the next level, e.g. a Level 4 to 5) and cross-skilling (moving an existing employee from one Level 4 skill set to another Level 4 skill set) pathways are in place.

➔ Retraining people from other organisations or sectors, enabling a clear pathway and transition that is appropriate.

Work to retrain talent from other sectors and talent pools

If we look to optimise the productivity of the talent we already have in the labour market, there are plenty of potential talent pools the sector collectively can work well with including:

Career changers – more mature workforce

According to a report for government by Dr Ros Altmann, 'A new vision for older workers'[11] by 2022, there will be 700,000 fewer people aged 16 to 49 in the UK – but 3.7 million more people aged between 50 and State Pension age. If the over 50s continue to leave the workforce in line with previous norms, we would suffer serious labour and skills shortages in the UK generally, which we know is compounded by our ageing workforce already. Research conducted with job seekers by ManpowerGroup showed that 34% of respondents stated ageism as the greatest career challenge. Not only does the older workforce need

11 Altmann, Dr R. DWP (2015) 'A new vision for older workers: Retain, Retrain, Recruit'. www.gov.uk/government/publications/a-new-vision-for-older-workers-retain-retrain-recruit

to be retained by keeping their skills updated through continued upskilling and training but they are a great source for recruiting new talent.

➔ Key to addressing our talent gaps will be the continued work with organisations such as DWP to retrain people from other industries who are losing staff, but also considering apprenticeships for older workers especially with the opportunity the levy presents the industry.

Military service leavers

Since over 13,000 skilled and experienced individuals are leaving the armed forces each year to make the transition to civilian life, this presents the energy and utilities sector with an opportunity to attract transferable skill sets from a rich talent pool. There is high demand among employers for the engineering and technical skills of service leavers – as well as management and leadership.

The energy and utilities sector can have more impact with service leavers by working in a consistent and coordinated way. Career Transition Partnership (CTP) can really understand what will motivate service leavers to join our industry, what makes our industry attractive to them and to identify transferable skills, ensuring appropriate training that enables efficient retraining.

Areas where employers feel there is potential to transfer skills:

Behavioural skill sets demonstrated by service leavers

- Accountability
- Initiative
- Safety behaviour
- Accurate / methodical approach
- Discipline and rigour / ability to follow processes
- Time management
- Planning
- Team work
- Problem solving
- Confidence

Technical skill sets required in our sector

Cross-sector

- Leadership / management
- Health & safety awareness
- Project management
- Process engineering

Gas

- Dual fuel gas / electrical engineers (fitting and engineering) – Smart Metering entry point
- Gas operations / team leader – supply chain
- Leadership
- Project management
- Future – rapid response engineers

Power distribution

- Electrical design
- Project management
- DNO experience / high-voltage experience
- Substation maintenance
- Overhead lines / working at heights
- Commissioning

Waste and water

- Energy recovery facilities and engineering
- Electrical – Sub Mariners
- HGV – CPC qualified
- Logistics
- Surveying
- Electrical installation and engineering
- Mains / service layers
- Future – new technologies

Other sectors losing skill sets

In Scotland, the Transition Training Fund managed by SDS supports oil and gas sector workers to transition into other specialisms. These workers' skills are highly relevant. Oil and gas have recently released their workforce plan to deal with the cyclical nature of their workforce.[12]

Key roles transitioning from the oil and gas sector range from support to technical functions. In many cases these skill sets are fully transferable to our sector, including: engineering design and consultancy, project management, electrical engineering, mechanical engineering, welding / fabrication, logistics, electrical technicians and business support. Many are transferable across our sector, in particular renewables, (offshore wind), overhead line operatives, welders, high pressure pipe jointers and controls engineering are not just transferable to our sector but to all that are delivering the NIDP.

➔ The energy and utilities sector will create a working relationship with the oil and gas industry through OPITO to identify transferable skills and skills gaps to work in a coordinated high-impact way.

12 HM Government (2016), 'Oil and Gas Workforce Plan'.

Table 3: Engagement in today's multigenerational workforce.

Managing Today's Complex, Multigenerational Workforce: A practical guide to engaging the five generations. 2016 report by Kronos Systems Limited.

	SILENT GENERATION (Traditionalists) Born before 1945 10% of workforce 'Company loyalty'	BABY BOOMER Born 1946–64 44% of workforce 'Live to work'	GENX Born 1965–80 34% of workforce 'Work to live'	MILLENNIALS (GEN Y) Born 1981–approx. 2000 12% of workforce, increasing rapidly 'Work my way'	GENZ (GEN 2020) Born approx. 1995 and later 'Make a difference'
How to engage them	■ Create mentorship opportunities ■ Leverage relationships	■ Help with worklife balance so they stay in workforce as long as possible ■ Be smart with succession planning – their retirement will cause a huge 'brain drain'	■ Foster leadership – these are the best-educated employees in history ■ Compensate ■ Provide clear career path ■ Coach and guide	■ Empower to figure out things on their own ■ Do not micro-manage ■ Self-service is mandatory ■ Demonstrate that you're as comfortable with technology as they are	■ Communicate with images ■ Put in collaborative teams to build collective conscious ■ Provide a vision since they are future-focused ■ Managers need to have intellectual humility

➔ We will also work with organisations that focus on redeploying outplaced professionals from other sectors.

Changing nature of the work environment

"Technological advances and automation are dramatically reshaping the world of work. Talent sources, work models and people practices are being irreversibly changed." (ManpowerGroup – The Human Age 2016)

To not only attract but, more importantly, to retain a multi-generational workforce, we must continue to challenge traditional work practices now we are faced with a much more dynamic labour market. Managing five generations of employees requires different engagement methods that impact the full talent lifecycle from attracting them into the business to how we develop, manage and retain them. This affects all aspects of our working practices, from recruitment to offering flexible working and benefits. The shift to more flexible working environments, where better work-life balance is sought, the need for: home working, flexibility on when employees can take breaks right through to how this impacts technology must all be embraced as we address our changing workforce dynamics.

Whether it is about retaining our ageing workforce for longer or being attractive to millennials or the imminent entry of GenZ, more flexible work practices are critical if, as a sector, we are to be competitive in attracting and retaining talent. Table 3 shows the breadth of approaches required to engage with today's multigenerational workforce. By 2020 35% of the global workforce will consist of millennials and 35% with GenX[13] as well as the requirement to plan and be ready for the new talent entering our workforce – GenZ. The ManpowerGroup research also found that millennials see individual jobs as stepping stones to self-improvement rather than a final destination. This is a transition for our sector, which has traditionally followed a job for life approach.

As our sector experiences flatter and thinner organisational structures, the transfer of experience and competence across contexts and sectors is critical. This in turn requires richer narrative descriptions of competencies besides the formal definitions that can be profiled and mapped as the sector evolves.

With an ageing workforce the energy and utilities sector must support new working practices to be fully inclusive and also ensure the managers and leaders we have in place have the right skills to manage the new workforce.

Companies in our sector need to be able to embrace the change that millennials are driving; this will benefit all generations of employees. We cannot afford to operate outdated people strategies and the sector must acknowledge the need for different strategies for each generation, who all bring their own value and critical contributions to the workplace.

Continued work with PEIs

The energy and utilities sector will continue to work with the Engineering Council and PEIs to align careers with professional pathways ensuring improved access to professional registration and membership across its workforce.

13 ManpowerGroup (2016), 'Millenial Careers: 2020 Vision'

Case Study: Career Development – Northumbrian Water Group

Background
Northumbrian Water is seen as a great place to work by its employees. As a consequence the company has a stable workforce, in an industry where career progression has traditionally been evolutionary and linear.

Challenge
As is common with many companies in the sector, future pensions challenges mean many people are choosing to stay at work rather than retire. This was creating a potential blockage in development opportunities, and Northumbrian Water employees fed back that they were unsure how they could progress their career.

Action
Led by the company directors, Northumbrian Water began a programme called 'Our Way, Your Direction'. They worked with their employees to get them thinking differently about careers and personal development, while showing managers that they had a significant role to play. For example, the HR team challenged recruiting managers to think about how they could create a development opportunity for an existing employee through a project or a secondment. A resource bank was set up on the intranet to help people identify opportunities like becoming an employee rep, a diversity champion, a wellbeing champion, or volunteering.

While development may mean career progression for some, to others it means remaining good at their current job, broadening their experience or even preparing to retire. Most importantly, the mid-year appraisal meeting was changed into a personal development conversation called 'It's all about You'. Everyone was trained on understanding how to make the most of new opportunities available to them, recognising the value of new experiences over linear progression.

Outcome
Within a year of launching 'Our Way, Your Direction', the number of people who believed that their career could progress internally increased by around 15% to over 65%. By 2016 over 200 people were working on secondments to broaden their experience and develop new skills and insights, which strengthens their chances of being successful at interview for a new role.

Group HR Director, Sarah Salter: *"It's about people feeling they can have ownership of their development. Whilst managers can help and support, it's really about our employees finding their own drive and inspiration, and being open to a wide range of experiences."*

Case Study: Group Competence Scheme – British Gas

Background

The Group Competence Scheme (GCS) has been developed in collaboration with gas companies and Energy and Utility Skills to offer an alternative solution for maintaining the competence standards of employees.

Challenge

In a high risk industry, it is essential that engineers are kept up to date on all matters of gas safety (MoGS). Before the GCS was introduced, the only way that competencies could be renewed was via the Accredited Certification Scheme (ACS) route every five years. It has been reported that significant stress has been felt by engineers having to complete an off-site assessment every five years, in some cases resulting in early retirement.

Action

The GCS has been developed so businesses can use the current systems and processes they have to confirm the competence of Gas Safe Registered staff. It removes the need for engineers to undertake ACS assessments completely.

Outcome

For British Gas, the GCS has proven to be a landmark success. Through the implementation of the GCS, the company has led the way for the industry by challenging existing processes and methodology, confirming that an alternative scheme to ACS is viable, and will also deliver long-term benefits to the industry and customers. Over 700 engineers have now demonstrated competence via the GCS and details have been downloaded to the Gas Safe Register®.

Richard Harper, Technical Standards Manager at British Gas, has won an outstanding contribution award from the Institution for Gas Managers and Engineers (IGEM) for his implementation of the GCS. British Gas won the Utility Week award for staff development, as a result of this step-change in how the industry manages competence.

Case Study: Scottish Water: Retaining, Retraining and Upskilling the Workforce

Challenge

To ensure that knowledge, skills and experience are retained within Scottish Water when the workforce retires, while attracting and supporting the development of the next generation.

Action

Scottish Water created an integrated talent strategy that supports the retention and transfer of experience, skills and knowledge. Harnessing the knowledge of their experienced employees, the company's strategy supports the development of the next generation and builds their capability pipeline for the future. The approach seeks to combine experience and youth.

Outcome

Scottish Water has created a strategy that energises, engages and enables the working needs of a multi-generational workforce.

Experienced employees have been seconded and recruited from their front line operational roles to form learning faculties in Scottish Water's skills academies. This has helped to retain hundreds of years of collective knowledge and wisdom that is now helping to upskill and retrain the existing workforce. Additionally, vacancies created through initiating these internal job-moves have created openings for additional modern apprentices to enter into Scottish Water's youth pipelines.

The strategy includes a focus on flexible and early retirement, which has enabled Scottish Water to work with and enhance their age demographic by allowing employees to gradually smooth their transition into retirement. This also helps to create capacity in the organisational system for additional apprentices, graduates and trainees, enabling a scheduled and smooth approach to releasing skills and transferring knowledge.

2.6 Procurement and the Supply Chain – the Skills Accord

Objective

To adopt sector wide procurement practices to promote higher levels of training throughout the supply chain.

The Challenge

- **Investment in skills throughout the supply chain:** Working across the supply chains in helping businesses collaborate for mutual benefit on skills investment is essential. This ensures sustainable supply chains as well as providing opportunities to develop new talent through apprenticeship routes. It is proven that investment in skills training brings a high level of return yet the pressure on contractors to remain competitive often results in underinvestment in skills. Apprenticeships bring £26–£28 of economic benefit for every £1 invested by Government.[14]

- **Encouraging investment in training:** The supply chain predicts it will fill 83% of its future vacancies by going to the marketplace compared to 26% for asset owners, who have a much heavier reliance on internal moves, growing talent and promoting from within.

- **Achieving parity across the supply chain:** Building on the experience of Crossrail, TfL and the Government's Commercial Executive, a new way of incentivising the supply chains is required to generate the necessary capacity and capability the sector needs, by retraining the current workforce and creating new, additional apprenticeships and traineeships.

Progress to Date

- **Development and pilot of the procurement Skills Accord:** The Skills Partnership has established a Contractors' Forum of senior executives to review procurement practices and the changes necessary to address skills issues. Procurement policies provide a means of delivering change at scale: introducing the same requirements for all contractors, adopting a consistent approach to managing relationships and measuring performance fairly and transparently. The current Skills Accord sets out a series of commitments designed to promote and lock in sustained investment in the skills the sector needs most and, in turn, the plan is to cascade them down to their own suppliers.

  The Skills Accord pilot is underway, involving Amey, National Grid, SSE, Thames Water and UK Power Networks, who have been consulting on this approach to procurement and investment in training with their strategic suppliers (26 companies have been consulted).

  The official company signing of the Skills Accord took place at the launch event on 11 October 2016 at the House of Lords., when 26 pilot companies signed the Skills Accord.

- **Addressing technical skills gaps and shortages through apprenticeships.** The companies have committed to promoting the Skills Accord to their supply chains and embedding their commitment into their procurement processes. As a result, the apprenticeship reforms, and the levy in particular, will impact the company's training and workforce planning and commitment to the Skills Accord. This project will address the technical skills issue and encourage suppliers to develop their workforce and align with the reform's aims. In particular, the distribution of unspent levy funds to suppliers in the sector and support for SMEs will be key enablers in this project. This initiative also illustrates how the funds could be distributed to suppliers in the other infrastructure sectors

- **Delivering the NIDP:** The initiative aligns with the Government's commitment to skills outlined in the NIDP for Skills. From 1 April 2015, companies bidding for large public infrastructure projects are required to demonstrate their commitment to skills, by ensuring and incentivising skills investment through procurement processes.

Plans to 2020

Implementing the Skills Accord: Employers throughout the supply chain must make an investment in skills; using procurement for leverage will help ensure a higher level of investment in apprenticeships and training. The focus will be:

- for all companies to commit to a 5% workforce target for training including apprenticeships
- to promote signing up to the Accord to the supply chain
- to promote relevant skills development across the supply chain through procurement
- to continuously improve performance; continuous improvement of signatories' sustainable work practices
- to monitor, report on and annually review company and sector performance

14 Department for Business, Innovation & Skills (2015), 'Measuring the Net Present Value of Further Education in England'.

Align with the apprenticeship levy: As part of assessing success and return on investment there will be an evaluation of the Skills Accord Initiative and progress made against the commitments.

Commitment to support the supply chain in embedding skills is paramount. Details on how the apprenticeship levy and Skills Accord aligns can be found in Section 2.2.

Data from our workforce planning activities suggests that with a combined workforce of 88,895 (across the gas, power and water contractors and asset owners), to meet the 5% target of the Skills Accord would require 4,445 'significant training interventions' in each year.

Photo: Skills Accord launch event, October 2016 at the House of Lords.

Priority 3: Targeted Action – to Address Anticipated Skill Gaps and Shortages

Overall rationale: to ensure targeted action can be taken to tackle specific sector issues, these include:

- Improving longer-term workforce planning intelligence
- Multi-skilling and workforce mobility, including sector-wide mobility accords
- Improved quality of training provision and provider responsiveness, and consistent industry assessment
- Attracting overseas workers to address short-term needs while adjusting to the implications of Brexit and the need to become more self-sufficient

3.1 Improvement of Workforce Planning Intelligence to Tackle Regional Pressure Points

Objectives

To establish a robust set of data and trend analysis for the whole sector, as well as individual sub-sectors, that will enable a sharper focus on action to mitigate the risks of future skills shortages and gaps nationally and regionally.

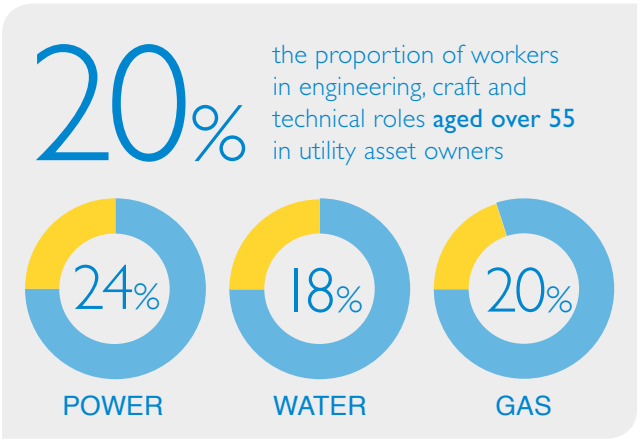
To ensure skills shortages can be tackled at a regional and devolved nations level.

The Challenge

With technology and innovation playing a critical role in delivering the future energy and utilities infrastructure, strategic workforce planning is a crucial component of successful business and resource planning. If done at its best, each participating employer will gain a deeper understanding of both the internal (i.e. their own) and external factors affecting the supply and demand of the skilled labour they require to deliver business success. The sector is looking to address:

- **Understanding future workforce needs:** longer-term workforce planning would quantify the potential demand for job roles and skills that are not currently employed in the sector. We would then be better able to anticipate and avert emerging skills pressures.

  Over the next ten years, it is expected that 100,000 existing employees in the sector will retire,[1] presenting employers with an imminent skills replacement problem and adding to the complexity of longer term workforce planning. The challenge of skills replacement is especially pressing for engineering, craft and technical roles within the utilities asset owners where the proportion of workers aged 55 and above is 20%. This compares to just 16% of the sector's tier 1 supply base and nationally,



1 Energy & Utility Skills workforce planning data (unpublished).

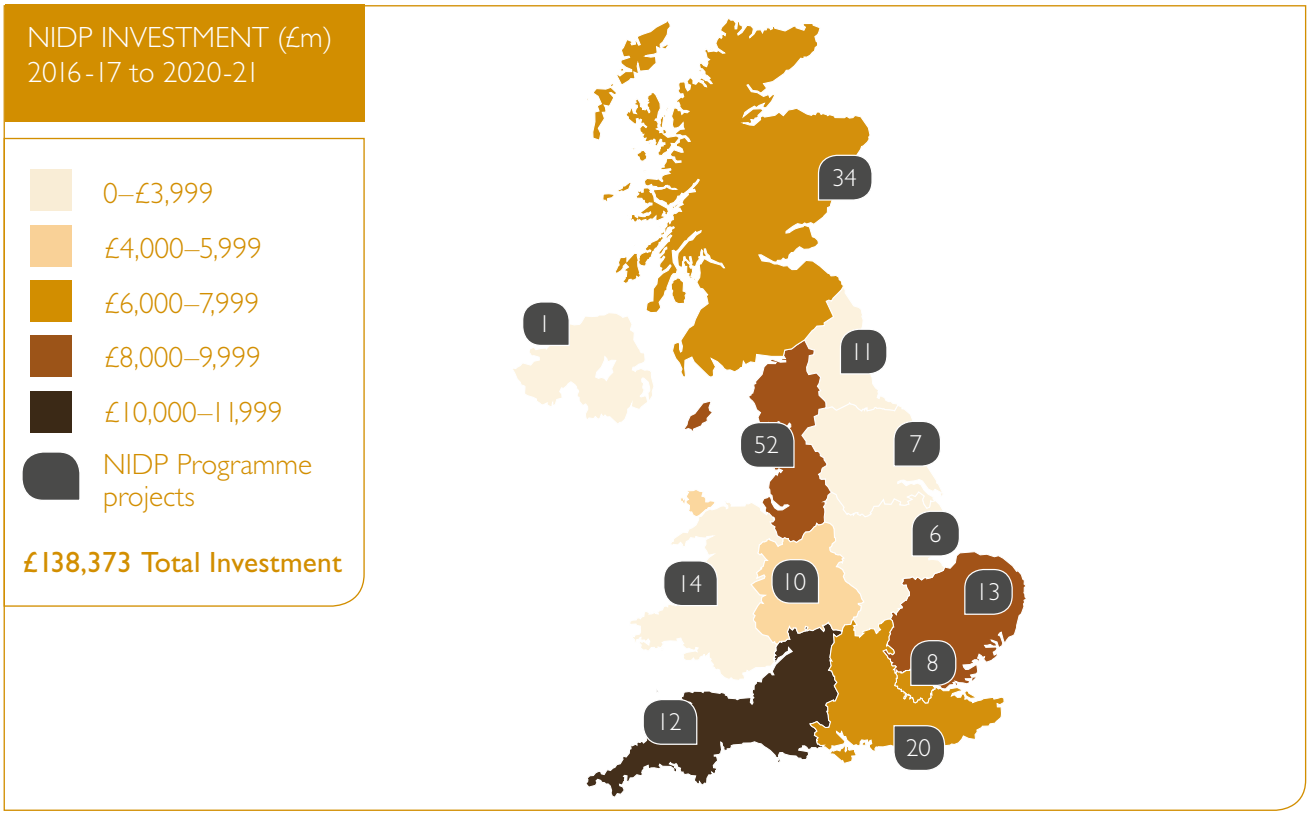


Figure 5: National Infrastructure Pipeline investment by region / nation (2016-17 to 2020-21)
Infrastructure & Projects Authority (Autumn 2016), 'National Infrastructure Pipeline.'

across other sectors. There is a similar situation across the European energy workforce. The European Public Services Union reports that from 2020 onwards, 'the ageing effect across Europe (of the energy workforce) will be felt the hardest and it is throughout this period in which the number of people of working age drops, despite improvements in participation rates, and employers will literally be competing with each other to recruit the right number of people with the right skills. From 2020 onwards those employers who have taken no steps to tackle the ageing effect will quite literally be fighting for survival.[2]

- **Horizon scanning and its impact on workforce planning:** much of our thinking addresses short-term issues based on today's understanding of the sector. However, there are many unknowns that will fundamentally change our sector over the longer term, particularly in relation to technological advances, so having foresight that further considers the longer-term impact of these technologies and digitisation will help us determine the required make-up of our entire workforce well into the future.

  The NIDP gives a clear outline of projects in our sector and adjacent ones – with some challenges between now and 2020 as outlined in Figure 6.

Longer term, the energy and utilities sector is changing. Industries are converging, with a number of factors creating a future that will be substantially different from today. Some of these elements include: the growing population, resilience against climate change, Government strategies and commitments to national and international environmental targets, combined with the demands for increased customer service and engagement.

This change sees a number of the required capabilities being customer-centric, innovative, digitally advanced and operationally excellent, creating new ways of working, jobs and career opportunities. While the exact nature and extent of the specific skills required to develop and deploy the many new technologies is largely unknown at this stage, most research suggests they are skills that can be learnt or brought in from other sectors or can be achieved through upskilling and adding to existing skill sets.

A key aspect of this strategy will be to continually monitor developments in the sector and to target our workforce planning activities appropriately – including for those job roles and skill sets that, although not needed at the moment, will be required in the future. By identifying and prioritising these requirements, we will be able to reduce the impact of future skills shortages.

2 Working Lives Research Institute (2009), 'Demographic change, age management and competencies in light of the challenges facing the European Gas sector'

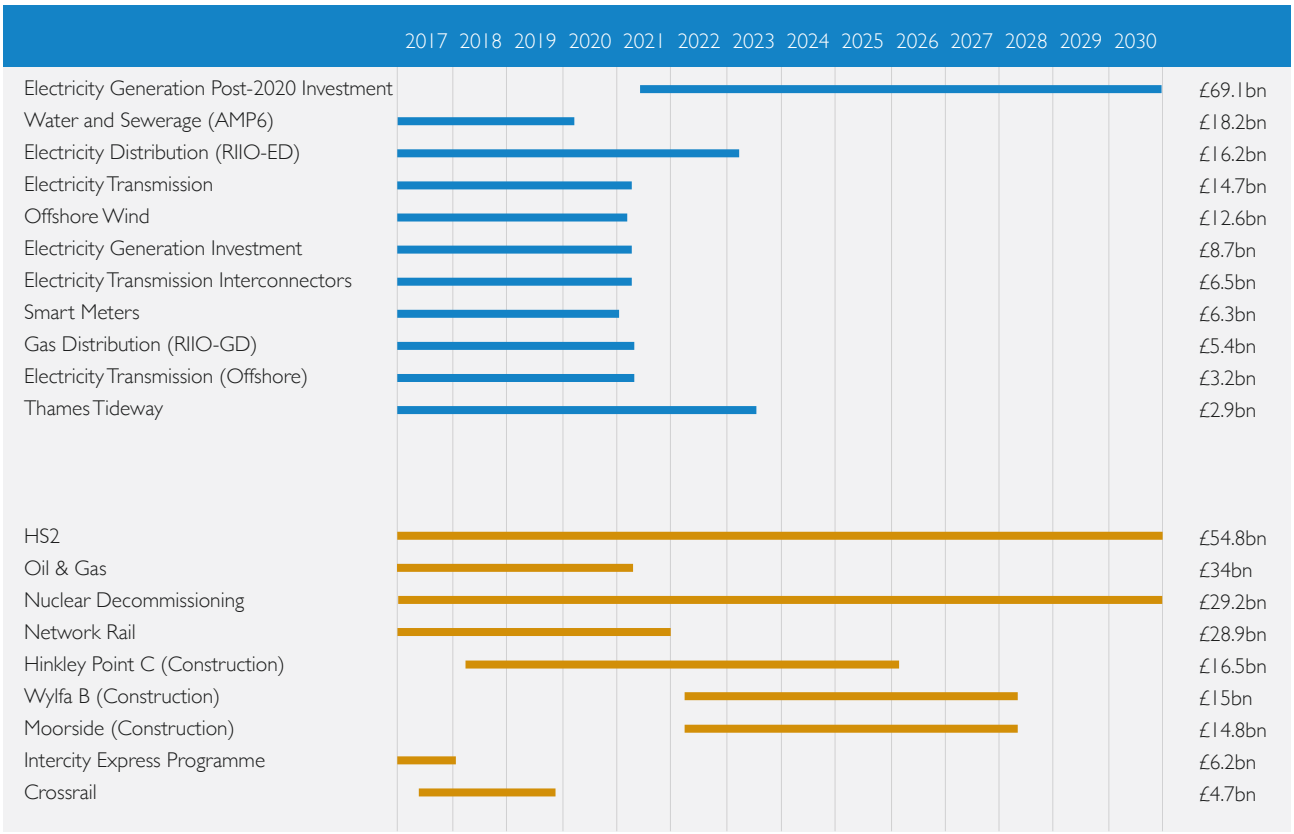


Figure 6: National Infrastructure Pipeline investment for selected sectors / projects (2017 to 2030)
Infrastructure & Projects Authority (Autumn 2016), 'National Infrastructure Pipeline.'

- **Identify regional and national skills issues and pressure points within and outside the sector:** having comparable workforce data and intelligence would identify skills issues at the level of the job role; enabling collaborative solutions to be developed both within the energy and utilities sector and in conjunction with other adjacent sectors. Many of the gaps and challenges identified are in more commercial non-technical skill sets.

  The NIDP is also creating regional and local skills issues. The regions earmarked for the most energy and utilities infrastructure investment are the North West (£28.9bn), South West (£20bn) and Wales (£19bn). In addition, there will be £147bn UK-wide investment and £22bn offshore investment.

  By combining statistical intelligence such as this and anecdotal evidence, it appears that there are two aspects to the geographical make-up of skills shortages: in rural localities – difficulties caused by sheer paucity of labour available locally; and in urban areas – difficulties experienced where there is a lot of adjacent sector activity. For example, in the West Midlands there are significant automotive, aerospace and manufacturing supply chains while, in London and the South East there is a constant civil and infrastructure demand.

- **Understanding skills supply and demand:** having visibility of the relevant intelligence relating to the external environment (i.e. the supply of skills coming into the labour market and competition from other sectors, e.g. Hinkley Point C, HS2), will place our sector's challenges in a much wider context.

Progress to Date

Since 2006, workforce planning has supported industry-wide activities undertaken for individual and collective workforce renewal plans for parts of the sector. It started with the gas distribution networks in the development of a framework to aggregate and identify the workforce needs of the five regulated companies, to be used by both the individual companies and Ofgem in determining an appropriate strategy during the subsequent price control period. This initial collaboration with National Grid, Northern Gas Networks, SGN (formerly Scotia Gas Networks) and Wales & West Utilities was then developed further in a 2007–08 collaboration with the electricity distribution network operators (SSE, ScottishPower, Northern Powergrid, Electricity North West, UK Power Networks and Western Power Distribution). The approach and statistical modelling that was developed during these collaborations still form the basis of today's more sophisticated approach that we use across the sector (and in other sectors and internationally) today.

Industry-specific workforce planning

The power transmission and distribution industry and tier 1 contractors are the most advanced in terms of collective industry-wide workforce planning. The gas, water / water–waste industries have undertaken planning that now needs updating, and waste management did undertake some limited planning in 2013. In addition, high-level employment projections have been produced based on Department of Energy & Climate Change (DECC) smart meter roll-out data; but no detailed recruitment and retention planning has been undertaken.

Understanding future workforce needs

While some research by Energy & Utility Skills has been undertaken into the future skills requirements of the sector to 2030, there is still further work to be done in the context of the industry's overall workforce planning needs. 'Foresight' reports were produced to enable the energy and utilities sector to anticipate and prepare for some of the key skills challenges on and over the immediate horizon. Key themes included:

- The rising adoption of intelligent network technologies and automation increases the amount and complexity of information and data, requiring greater analytical, communication and technology skills.

- Big Data Management is changing the nature of the skills we need now and in the future. This impacts everything from asset management, monitoring and tracking, data collection and analytics, customer and user data through to the security and storage of all this data. It is influenced by a number of technology developments in our sector including the emergence of SMART homes, energy management for infrastructure, the need for dynamic pricing and tariff models, controllable local systems, grid and data service provision, the emergence of robotics, continued automation, the increased need for capacity management, and trading and portfolio service needs.

- An envisaged step-change in the way the sector interacts and engages with communities and consumers / customers as a result of the likelihood of consumers having increased power and options (e.g. new consolidators, smarter technology), strong communication preferences and an increased tendency to switch providers.

- The need for greater scenario planning, anticipation and responsiveness combined with enhanced critical thinking skills and personal resilience to cope with a range of different challenges, e.g. customer preferences, climate change, energy security and data terrorism.

- All sectors will become more 'demand-sensing', which requires both the demand-side to better understand the supply-side and vice-versa. In addition, there will be increased multi-utility interaction and integration.

- The need for stronger environmental and social governance and personal responsibility in this domain.

Plans to 2020

Overall the energy and utilities sector will review how it works collectively in achieving sector-wide workforce planning based on what we know today:

➔ Using data and intelligence to identify regional and national skills issues within and outside the sector: comparable workforce data and relevant intelligence relating to the external environment will be needed, especially at a regional level.

The sector will need to understand and monitor regional demographics together with their own sector data in order to agree where action will have most impact. Understanding our demographics and populations for all nations and regions is key to targeted action. Achieving consistency of data: having robust, consistent and industry-recognised data and intelligence available for each industry, collected to common workforce planning principles, will require the sector to fill existing gaps in workforce planning data.

➔ Establish employer-led strategic workforce planning principles; ensuring consistency of approach. Full sector coverage; gas, waste management and water workforce planning data needs to be updated.

➔ Extend workforce planning beyond technical / engineering job families for all industries, where feasible.

Technology shifts combined with the many unknowns mean that over the next five years we must look at the changing skill set requirements for the future across the UK. Businesses need to change how they react to the digital age and understand the knock-on effect for customer demand and how services are provided to customers. This is fundamentally changing the skill sets required by organisations, for example, the shift from large call centres results in increased on-line support. As we become custodians of increased volumes of data our skill set requirements are changing, with increased demand for project, change and contract management skills as some technologies are increasingly outsourced. This means our sector is increasingly competing for more commercially savvy innovators that are now sought across all sectors. Our challenge is understanding where and how we can differentiate our sector value proposition by understanding those future skills required.

➔ The sector will address future skills requirements to 2030 as part of future workforce planning models.

Case Study: RIIO-ED1 – Workforce Renewal

Background

In 2013 Energy & Utility Skills supported the six electricity distribution network operators (DNOs) in the development of their workforce renewal plans for RIIO-ED1 (April 2015 to March 2023).

Challenge

The six DNOs in the power industry know that there are oncoming skills shortages and skills gaps. Although some employers can predict the number of people required for their own workforce, they are unable to accurately forecast the scale of the challenge across the industry.

ENERGY & UTILITY SKILLS
ATTRACT › DEVELOP › ASSURE

The National Skills Academy
POWER

Action

Each network region supplied their own workforce data and assumptions around retirements, staff turnover and recruitment through a number of entry routes. Energy & Utility Skills fed this data into their Workforce Planning Model and produced outputs for each DNO region. These outputs were then aggregated to form an industry-wide forecast of labour demand for each job role.

Each network region received its own detailed analysis. Aggregated outputs were reported to Ofgem as evidence of the size of the challenge facing the industry over the short and medium term.

Outcome

The RIIO-ED1 example has shown how employer collaboration and knowledge sharing will be crucial to planning and securing the workforce of the future. Using the data provided, Energy & Utility Skills came up with an accurate, industry-wide picture of future recruitment needs.

The analysis identified the need to replace 3,700 retirees and 4,300 leavers through staff turnover. Taking into account the planned recruitment methods of each employer, the data showed that the appointment of more than 12,600 people will be required, including 4,500 apprentices and graduates, 3,800 internal promotions (all to be backfilled) and 3,800 recruits from the external marketplace. The analysis indicates that this recruitment activity could cost an estimated £368m to deliver over the next seven years.

3.2 Consistent, High-quality Industry Training and Assessment Provision

Objective

To work in partnership with employers and training providers across the UK to establish and / or maintain the end-to-end processes and procedures associated with the delivery of high-quality training and development and rigorous robust assessment and assurance. The overarching aim through the monitoring and measurement of training, assessment and assurance is to give employers confidence in the quality, consistency and comparability of workforce knowledge, skills, understanding and competence across the sector.

The Challenge

To ensure the skills deficits over the next decade within the energy and utilities sector are addressed through an approach which does not compromise safety and quality to internal or external targets, finance or funding. There is an overwhelming need for quality assurance within training delivery and assessment, while the quantity and choice of providers available to the sector remains a challenge. To ensure that the supply of training provision for upskilling and apprenticeships continues to improve and return value to employers and while the quantity and choice of providers available to parts of the sector remains a challenge, the Skills Partnership will focus on the continued supply of fit-for-purpose training provision. This means:

- Making accessible, relevant, flexible and high-quality training available, which enables appropriate return on investment. This is a challenge when the time taken to identify quality training providers, and then negotiate with them, can be lengthy and difficult, especially for employers who do not have their own training department.
- Shorter targeted sets of modules would be more appropriate than the longer programmes often available.
- Robust and fit-for-purpose apprenticeship training. 97 training providers failed to meet the minimum standard of 55% of apprentices achieving their apprenticeship in 2014–15.[3]

The Skills Partnership work together to ensure consistency in assessing competence because:

- There are inconsistent approaches to recording UK-wide competence thus restricting the portability and transferability of workforce skills.
- Current assessment practices do not always build on the methods of measuring competence recognised by employers in the workplace, developing and delivering approaches to securing competence that align with processes and procedures that are tried, tested and trusted by employers. Aligning with workplace practice will be vital for consistency.

Progress to Date

Quality assurance of training provision

Assuring quality of training provision is important to our sector. It gives businesses the confidence that training is of sufficient quality and is consistent and relevant.

The launch of the Skills Partnership Employer Ownership of Skills pilot (2014–16) saw the creation of the Quality Framework designed to assure the quality of providers and their training products administered through the EUIAS. This Quality Framework took best practice from across the four nations and the sets of sector-specific requirements identified by Skills Partnership employers, to create a single quality assurance approach applicable to employer providers and third party training providers alike. So far, the Quality Framework has approved 76 training providers and 259 training products for the sector.

Building training capacity

Solid progress has been made in addressing sector training capacity issues with either employers becoming training providers or by increasing external training provider capacity. One clear example of this is the increased training capacity needed in relation to the smart meter roll-out. With only 12 approved providers in April 2016 presenting a risk to the roll-out, the focus on adding training capacity has resulted in five new approved providers as of September 2016 and a further 17 providers in the approvals pipeline.

➔ The sector will continue to identify training capacity gaps and build capability and capacity using the Quality Framework provision and provide a quick reference register of approved providers.

3 National Audit Office (2016), 'Delivering value through the apprenticeships programme'.

Consistent sector assessment and assurance
In line with the Government's Trailblazer Apprenticeship reforms, the sector now has a series of employer-led standards underpinning end-point assessments of new apprenticeships. These assessments now align to employers' own competence assessments, streamlining the assessment process and the transition from apprentice to competent employee, bringing increased efficiency and higher quality in apprenticeships. Through the Skills Partnership, employers worked together to develop an assessment and assurance service (the EUIAS) giving employers greater control and a stronger voice in apprenticeship development, delivery and assessment in the sector.

Governed by 14 employers and six external stakeholders, the EUIAS has four assessment and assurance panels that oversee more than 40 businesses in our sector. There has been a 100% success rate in applying to the Register of Apprenticeship Assessment Organisations (RoAAO) to allow the EUIAS to offer assessments direct to employers in the sector, maintaining employer leadership and control. To date, the EUIAS can offer assessment of seven apprenticeship end-point assessments.

➔ Given the skills demands emerging through the sector's role in delivering the National Implementation Plan the sector is building wider relationships with other provider networks to enhance opportunity, geographical distribution and cross-sector cohesion to benefit major asset holders and contractors within the sector.

Case Study: Apprenticeship Standards

Background
EUIAS was set up with the aim of better aligning all of the sector's occupational standards. The EUIAS has played a key role in advancing Trailblazer Apprenticeships in the sector to meet industry needs.

Challenge
With the introduction of the new Trailblazer Apprenticeship system in England, employers were unsure how to deliver the new Apprenticeship Standards. Employers were also uncertain about how the end-point assessment process would work.

EUIAS - UK Power Networks First Trailblazer Apprentices

Action
The Power Network Craftsperson Apprenticeship was developed by 12 employers in collaboration with the Energy & Utilities Independent Assessment Service (EUIAS). The EUIAS ensured the rigorous end-point assessments to determine workforce competence levels were based on tried, trusted and tested methods within a safety sensitive industry. This provided crucial end-to-end support for the employers involved.

Outcome
The National Skills Academy for Power, part of the Energy & Utility Skills Group, helped to make history when the very first apprentice cohort, following the new employer-led designed Apprenticeship Standard graduated at the House of Commons in July 2016.

The 15 apprentices, employed by National Skills Academy for Power's member UK Power Networks, were the first to successfully complete one of the new Apprenticeship Standards designed by a number of employers to meet the needs of the power industry. The employer-led Trailblazer programme forms a key part of the Government's reform of apprenticeships to ensure businesses get the skills they need to succeed.

Since graduating, the apprentices are putting their Power Network Craftsperson Standard training programme to good use, having been trained as 'jointers', connecting and repairing underground electricity cables to keep the lights on across London, the South East and East Anglia. Their role includes ensuring local electricity networks are ready for the roll-out of smart meters by electricity suppliers.

3.3 Workforce Mobility, Multi-skilling and Transferability of Skills

Objective

To encourage the mobility of skilled people within the sector to reflect the changing needs of the sector, and across other sectors through passport schemes and shared resources. These will emphasise the importance of behavioural competence, bringing functional and technical competence to life.

"Competence is the ability to undertake responsibilities and perform activities to a recognised standard on a regular basis. It combines practical and thinking skills, knowledge and experience. The competence of individuals is vital, whether they are employers, managers, supervisors, employees or contractors, especially those with safety-critical roles (such as plant maintenance engineers). It ensures they recognise the risks in their activities and can apply the right measures to control and manage those risks." **Health and Safety Executive**

The Challenge

The energy and utilities sector comes into contact with some 65 million UK citizens daily, as it goes about its business of delivering essential utilities services. Providing such a vital service consistently, each and every day of every year, brings many hundreds of thousands of workers into potentially dangerous situations that demand rigorous approaches to health, safety, wellbeing and competence. There are three main challenges that the sector will continue to address:

- **Ensuring a safe and competent workforce:** In such a front line environment, the goals remain: zero accidents, zero harm and constantly rising health and safety standards. Many of the skills and competencies required for each individual sector are not company-specific and therefore common approaches to standards can be achieved. Achieving a common set of competencies can provide enormous efficiencies in costs and productivity especially in the sector's supply chain.

- **Developing a workforce safety culture:** Focusing on the development of common behavioural competencies, supported through leadership coaching and guidance, will enable a sustainable approach to safety culture development within each industry.

- **Mobile workforce:** Agreeing common competencies can aid workforce mobility, which is particularly important where regional skills shortages exist and also in storm situations where the pooling of resources is required. There are opportunities to achieve this within the sector as well as across adjacent sectors with similar skill sets.

Progress to Date

Extensive activity is underway across the UK – in gas, power, water and waste management to demonstrate each company's commitment to the safety and wellbeing of all employees, and those who come into contact with our businesses. The sector seeks to protect by managing risk in a proportionate, appropriate and effective way, encouraging all those involved to take much greater ownership of health and safety. With the number of standards that exist to manage these risks, the sector has made progress in focusing on simplifying the approach to managing these risks. A lot of progress has been made in the sector including:

EUSR – the sector's skills register
For over ten years the sector has developed and used the skills register, which now hosts over 163,000 individuals, over 1.1 million skills records and has 86 separate schemes. The scheme portfolio spans our sector and includes partnering with other organisations such as CSCS in developing Utility Safety, Health and Environment Awareness (SHEA), to secure a uniform approach to health, safety and environmental awareness training across the utilities sector, reducing duplication with other sectors with a fit-for-purpose sector scheme designed to provide on-site evidence that an individual has demonstrated an appropriate level of knowledge and awareness. Working in line with Health and Safety Executive (HSE) guidelines, the scheme comprises of as many as 15 tailored modules. Eight core modules are common to all utilities industries and form the basis of health, safety and environmental law and practices.

National Water Hygiene
The National Water Hygiene scheme, or Blue Card, was created by the UK water industry in 2006 to provide a standard for operators working with water, to minimise the risk of and avoid possible contamination. The scheme looks at all aspects of good hygiene, from assessing personal health through to preventing contamination through equipment and processes. Celebrating ten years of operation, the Blue Card is a mandated requirement on almost all water company sites and continues to make a significant contribution towards protecting public health. It continues to evolve to keep pace with the many changes and challenges in the water sector, and is also now being widely adopted by all those mitigating risks while working in contact with the public water supply.

Being Gas Safe – Group Competence Scheme

The Gas Safe Register holds a record of all engineers deemed competent to work on specific gas appliances and installation. The Group Competence Scheme has been developed through a collaboration between gas companies and Energy & Utility Skills to further optimise the management and maintenance of employee competencies. Endorsed by the Industry Standards Setting Body, supported by the United Kingdom Accreditation Service (UKAS) and the Health and Safety Executive, the scheme collects evidence generated from many sources and audits across the workplace to gain a detailed insight into the environment surrounding the workforce. The information gathered then forms a basis for continual assessment, improving on traditional systems which take a single snapshot assessment every five years. Once all of the scheme requirements have been satisfied, all competent assessed employees within the business can successfully renew their Gas Safe registration. This scheme offers industry reassurance of an individual's competency while creating a more efficient approach to assessment.

Power improvement

Powering improvement is a ten-year-long health and safety strategy for the Energy Networks Association and Energy UK membership, plus trade unions and the Health and Safety Executive, to bring about continuous improvement in safety and occupational health in the energy generation and networks sectors.[4]

Its three overarching themes – 'Leadership', 'Improving Competence' and 'Worker Involvement' – will run throughout the duration of the campaign. Each year then has a separate area of focus, with 2017 concentrating on improvements in the area of asset management.[5]

➔ Continuing the work and aligning to these objectives is important for many of the organisations in our sector.

Plans to 2020

The sector is continually looking for ways to improve standards, use effective management systems based on world class practices, design safe processes, operate reliable equipment and commit on going investment to reduce risk in all areas. Such an approach naturally complements businesses being successful, productive and achieving sustained growth. The sector will focus on three key areas:

Mobility within our sector

While we have been successful in ensuring consistency across some standards for the sector, and have developed schemes such as the Competency Accord for the power sector, achieving an agreed set of common competencies and standards in some of our Power Transmission and Distribution roles, the focus is now on embedding these into the sector's supply chain to achieve the efficiencies and savings desired.

➔ The sector will share both best practice and lessons learnt from the Competency Accord and how it can be replicated in other sector roles where a common set of competencies can be agreed.

➔ The sector will continue to identify ways to increase consistency of standards in the most efficient way.

Mobility across other sectors

Some of our skills shortages also have an impact on other sectors, as noted in the Transport Infrastructure Skills Strategy.[6] For example, high voltage overhead lines workers within the rail sector see contractors now paying six figure salaries at operative and supervisor level, with forecasts of 8% year-on-year wage increases. Working with the rail sector to understand the scale of the issue should be pursued in addressing this particular skills shortage.

➔ The energy and utilities sector will work with other sectors to identify ways to optimise the workforce we have and ensure more effective transferability of skills.

➔ We will also identify ways in which the sector can use passport schemes to recognise transferable skill sets and competencies that relate to our sector, which will open up the opportunity to more easily transfer skills into our sector. This will provide employment opportunities from other sectors or potential talent pools, for example core military competencies that relate to our sector when leaving the military, or relevant skill sets from the oil and gas industry.

Continue to embed a health and safety culture

In a highly regulated and audited sector, safety is at the top of the agenda for all employers. With sector fatality statistics remaining static from 2010 to 2016 at about 14 each year,[7] a focus on the development of a robust safety culture will be a key differentiator. A good safety culture is one that puts safety first at all times, trains staff, has built-in procedures, applies rigorous assessment and encourages trust, open dialogue and shared responsibility. Although historically, competence assessment against functional and technical aspects of front line roles has been the key focus, a shift towards behavioural competence development has been recognised as playing an important role in the success factors for developing and sustaining an organisational safety culture.

4 http://www.poweringimprovement.org/.
5 http://www.poweringimprovement.org/2015-2020/2017-2/.
6 Department for Transport (2016), 'Transport Infrastructure Skills Strategy: building sustainable skills'.
7 Health and Safety Executive (2016), 'Statistics on fatal injuries in the workplace in Great Britain 2016'.

➔ We will continue our commitment to ensuring a safe workforce with the ongoing focus to embed a safety work culture in all that we do, across the sector.

➔ We will collaborate across the sector to share best practice in safety culture development and act as an ambassador of HSE policy for energy and utilities.

➔ We will support the development of industry behavioural competency frameworks which support a clear health and safety focus for all workers, in all industries within the sector.

Case Study: Viridor – Competence Management System

Background
The Competence Management System (CMS), successfully integrated by Viridor, has been approved by relevant regulators and satisfies the technical competence requirements of an organisation's workforce under environmental permitting regulations.

Challenge
To develop a consistent approach to assessment and competence management in a cost effective way whilst improving the environmental performance of its sites.

Viridor wanted to ensure that their employees had training that was specific to their roles and reflected Viridor's business requirements.

Action
In order to ensure that their employees' competence aligns with the business requirements, a decision was made to develop an in-house competence scheme, Viridor CMS. Viridor adopted the Energy & Utility Skills' CMS scheme and have found it to be a great success.

Outcome
Implementation of CMS has improved awareness of environmental issues and permit requirements across Viridor's whole permitted operation. It has also helped with identifying crucial skills gaps and the development of consistency across different sites.

"The Competence Management System has been a breath of fresh air, tailored entirely to our needs. It has given us the ability to have a direct influence on the competence of our operational management team. This has provided us with the freedom and flexibility to evolve our training programmes in line with advances in technology and changes within our business. We are now in a position of having full ownership of our own Competence Management Scheme that reflects our specific requirements."
Simon Catford, HR and Regulatory Director, Viridor.

A number of other employers from across the waste and water industries have adopted the CMS, including Anglian Water, Cory Environmental and Severn Trent Water.

Case Study: Sector Passport Schemes

Background

Through passport schemes and shared resources, Energy & Utility Skills, together with employers, is encouraging the mobility of skilled people within the sector. This is in response to the changing needs of the sector, and across other sectors.

Challenge

There are increasing challenges facing the sector to achieve a competent, safe and flexible workforce, and the sector struggles to find proficient and competent new recruits in key roles. The Employer Skills Survey (2015) found the proportion of vacancies that are hard to fill in the energy and utilities sector due to a lack of skilled applicants is 36%, higher than any other sector (the UK figure is 23%). There is also a need to reduce duplication of training schemes, especially for contractors, so that efficiency and consistency can be achieved across the sector.

The National Skills Academy
POWER

Competency Accord

Action

The Competency Accord has been created by power industry employers and stakeholders in conjunction with Energy & Utility Skills. They share a vision of working towards a common approach to the recognition of competency and safety standards. This collaborative approach is geared towards agreeing industry training and assessment standards. The collective aim is to reduce the large amount of duplicated training and assessments currently being experienced by the industry workforce, without compromising the existing high standards of safety within the industry.

Outcome

A set of 80 power industry agreed standards, developed by industry for industry. To date, 10 schemes are available under the Competency Accord which support industry needs. Employers involved include Electricity North West, National Grid, Northern Powergrid, ScottishPower, SSE and UK Power Networks.

SINCE 2006
NATIONAL WATER HYGIENE CARD

National Water Hygiene Passport Scheme

Action

Introduced in 2006 through a collaboration between Energy & Utility Skills, the UK water industry and key public health bodies, the National Water Hygiene 'blue card' training has just reached its 10th anniversary of helping to protect the safety of our drinking water – from where the precious resource is first collected all the way to the tap. Now mandated by many water companies across the UK, the 'blue card' training and accreditation scheme continues to evolve to ensure it is fit for the future of a changing water sector, and is able to play an increasingly useful role in helping to ensure that all those working in contact with the public water supply think carefully about hygiene and managing risk, and understand best practice.

Outcome

There are currently 74,000 live 'blue cards' across the UK. The evidence shows that the 'blue card' system works – a recent regulatory report highlights that water quality is meeting 99.6% of regulatory standards.

3.4 Recognising the Need to Attract Overseas Talent

Objective

To encourage international skills mobility to address short-term skills shortages and appropriately reflect these requirements with the Migration Advisory Committee (MAC).

The Challenge

6% of workers in the sector are foreign nationals

compared to nationally **10%**

The focus for the sector is to continue its investment in UK talent while also being aware that in some cases skills shortages require overseas talent which as the UK labour market cannot supply, it means the sector faces wage inflation for certain specialist roles. This has resulted in reduced sector productivity which, in turn, has led to the use of labour from overseas.

- **MAC visa reliance:** Twenty-three occupations are unduly dependent on labour from abroad, as evidenced in reports to the Migration Advisory Committee, with big infrastructure contracts fulfilled by whole teams of migrant workers. Of these occupations 13 are currently registered for the power industry with 4% of the power sector's workforce made up of foreign nationals with a high proportion coming from New Zealand and India.
- **Brexit impact:** A consideration for the sector is at the skilled professional end of the labour market where MAC requirements should be acknowledged. However, certain parts of our sector rely heavily on the European workforce for unskilled and semi-skilled roles which would not qualify for MAC, for example the waste sector, parts of the water sector and also the contractors where there is a heavy reliance on the European workforce. We therefore need to consider how we will limit our dependency on overseas labour given that Brexit will limit such recruitment.

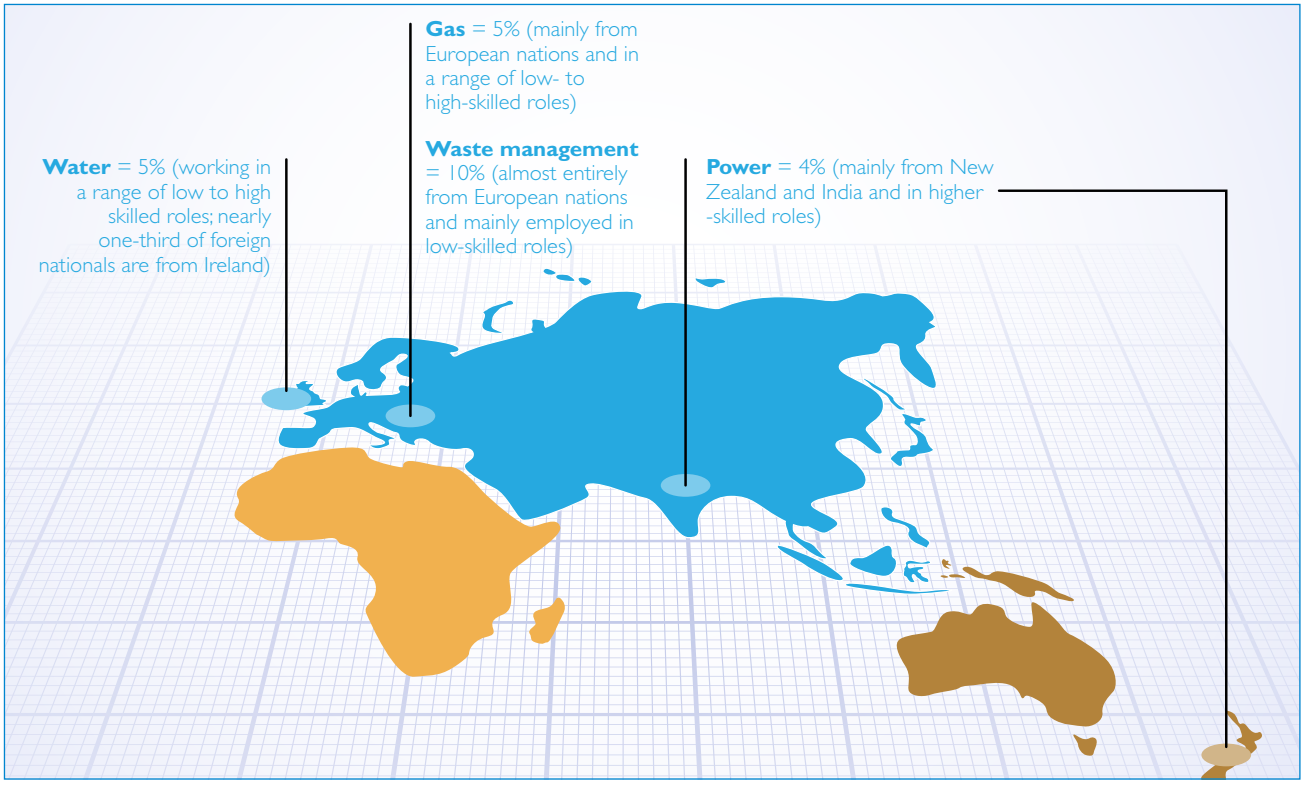


Figure 7: Sources of non-UK nationals in the energy and utilities sector. Labour Force Survey, four-quarter average, 2013.

The impact of Brexit, while unclear, will vary industry by industry. But the implications are that it is in the low-skilled areas that the impact will be felt most (on the assumption that higher-skilled workers will come from the global labour market). Employers will be keen to establish clarity on any new rules regarding movement of international labour, particularly within the European Economic Area.

The energy and utilities sector's small but significant dependence on foreign labour to help bring the volume and quality of individuals to fill high- and low-skilled roles suggest that Brexit could have a troublesome impact for the sector. This is particularly the case for the waste management industry.

- **Global context:** The UK is not alone in its skills issues. This is a global problem and our sector has global skills needs. ManpowerGroup's Talent Shortage survey in 2016 highlighted the continued difficulties that employers have in filling roles, see Figure 8. The top four most difficult-to-fill jobs over the past 10 years all impact the energy and utilities sector, and it is now the fifth consecutive year in which skilled trades jobs have been the hardest to fill globally. It appears that this is an issue reflected across Europe as well. IT staff have also appeared in the top four most sought-after workers globally, as they have a skill set that is increasingly in demand within the energy and utilities sector, since technology and automation are driving innovation, combined with the increasing need for cyber security and data management skills.

  This emphasises the need to continue growing our own talent to broaden our own UK talent pool, while also working hard to retain it in the UK with global competition for our sector's skill sets increasing.

Progress to Date

One of the Skills Partnership objectives was to improve recruitment, prioritising local communities and reducing dependency on expensive schemes for bringing in migrant labour teams. The Skills Partnership enables the sector to build tools that helped tap into new sources of talent within the UK.

The power transmission and distribution sector has had 13 job roles on the UK's Shortage Occupation List since 2012. The list has helped ensure the right talent is in place and helps to overcome the wage inflation that exists for some of these positions. For many the numbers are not huge but they are critical positions.

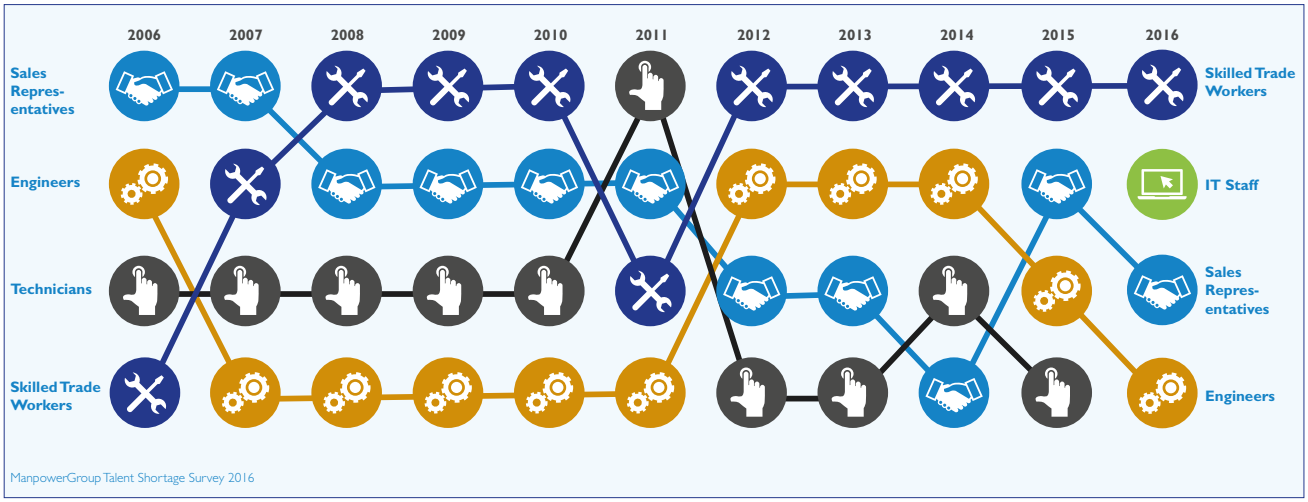


Figure 8: Global: top jobs employers are having difficulty filling 2006–16.

Plans to 2020

Our primary focus is to ensure the sector has the right skills in place to deliver against the NIDP and ensure a safe competent workforce is in place. This will primarily be through UK channels, but where this is not possible, ensuring that there are alternative options in place is critical for sustainable delivery. To do this plans will need to:

Understand and act on the impact of Brexit: Brexit may put pressure on worker availability from the EU in the short term, but it also offers a real opportunity to stimulate a greater and more targeted effort towards investing in, growing and retaining UK and international talent. If the four nations' Governments can ensure economic and political stability, it offers the highest chance of retaining employer investment and meeting workforce needs of the UK.

- Retention of our existing European workforce will be key to ensuring our sector has the right skills in the medium term.

➔ We will continue to monitor the situation regarding specific skills shortages through our workforce planning and other labour market intelligence.

Continue to work with MAC: over the medium to long terms, the Government and MAC expect any sector with job roles on the UK's Shortage Occupation List to be working towards self-sufficiency. Currently this only applies to the recruitment of foreign skilled labour from outside of the EEA. There is a working assumption that, post-Brexit, this may apply equally to European skilled labour. Depending on the impact of Brexit we will track the following:

- The need for the list to be extended to cover other job roles in the wider energy and utilities sector
- The need for new evidence of the need for these job roles to remain the Shortage Occupation List

➔ We will continue to work closely with the MAC, promoting the interests of the energy and utilities sector to ensure the right skill sets are available to the sector.

➔ We will pay specific attention to the impact of Brexit on the availability of labour in the sector especially the unskilled and semi-skilled workforce.

➔ We will ensure extra health and safety measures are applied, as we bring in overseas workers. Appropriate communications on UK safety requirements must make our rules and regulations clear and understandable. This must be cascaded through training, inductions and ongoing assessment, as is the case for all workers.

3 WORKING WITH GOVERNMENT & REGULATORS

The 2017 Industrial Strategy consultations published by central and devolved government start a vital conversation between policy makers, industry and wider stakeholders. Progressed in genuine partnership, they can help to create the supportive workforce and skills policy environment that can enable the energy and utility sector to fulfil its potential for the economy and society. Recognition of skills as a critical economic driver is a very welcome first step in the process. We will work closely with governments across the UK to help inform their final strategies and recognise the significant contribution our workforce can make to increased growth and productivity.

The Skills Partnership will work with central and devolved Governments to build the number of high-quality training providers and training products, seeking to further improve consistency in approach and make excellence the standard. The work continues to get the very best from the changes to UK apprenticeship policy and the National Occupational Standards (NOS) so that the desired political outcomes are achieved in an efficient and effective way that will deliver for the needs of business and the customers they serve.

The sector will be increasing its work with key regulators, professional and competence bodies, to further develop the successful 'risk-based' approach to quality assurance. Schemes and systems will be refreshed to take into account the changing working environment and new methods of embedding learning.

Through the process of building this strategy, extensive interviews and discussions have taken place with utilities employers across the four nations to better understand what an optimum operating environment could look like for them, and how government in Northern Ireland, Scotland, Wales and England can best respond. The top 12 recommendations were:

1. **Collective partnership across the UK**, to focus on building the optimum workforce to deliver the NIDP and the embedded elements for Wales, Scotland, England and Northern Ireland.

2. **Connection between emerging strategies and policies for education and skills**, and the delivery of the long-term plans, duties and goals of UK-wide sponsoring government departments and utilities regulators.

3. **Support for the National Audit Office conclusion** that "In order to derive the maximum benefit for the country as a whole, there should be a clear rationale for how apprenticeships fit into the wider plan for productivity and growth, including improving capital investment."

4. **Explicit recognition of the importance of strategic workforce renewal** within the future visions, strategies and policies of the key utilities sponsoring government departments and regulators.

5. **A predictable skills and employment policy and regulatory environment**, with clear goals, to help bring certainty and stability to workforce and skills investment.

6. **Resilience duties of regulators** to include ensuring a sustainable and competent sector-wide workforce, including recognising the workforce within the vital policy making and regulatory bodies.

7. **Regulatory impact assessments consistently deployed** to help policy makers and those required to act to better understand the objectives, options and trade-off between the costs and benefits.

8. **Consistent application of skills policy across the four nations** to avoid employers having to incur increased costs and red tape through multiple rules and regimes. Utilities businesses and their delivery partners increasingly operate for domestic and retail customers across the UK.

9. **Move towards simple, clear, practical and understandable regulation and policy** to reduce employers' costs and red tape.

10. **Review skills and employment policy and legislation** on a regular basis to ensure that they are necessary and relevant to the current operating environment. Support of sunset clauses to help this occur.

11. **Select a small number of agreed policy objectives** and pursue them together to completion, in full and transparent collaboration.

12. **Sector attraction and inclusion** is incumbent on all key players in the utilities sector, e.g. policy makers, regulators, regulated businesses and delivery partners. We collectively perform a critical service for society and can offer amazing careers to a diverse workforce.

4 SKILLS STRATEGY ACTION PLAN SUMMARY

This strategy is the start of "a" new collaboration that sets out our key issues and enables us to commence early solutions in the priority areas. While starting to see what needs to be addressed in the future, senior leadership is key in ensuring change happens with pace and impact. Over the coming months we will consult with key stakeholders across industry, government, academia and training providers to build a series of detailed actions to address the skills challenge. There are five focus areas with associated activity that the sector will work together to address.

Overview	Focus activity areas
Leveraging what we have and reducing duplication for increased efficiency: Build on the investment made and engagement work already carried out by employers working with key partners and educational institutions to promote the sector in a coordinated way. We will continue the focus of future training standards and the use of passport schemes to increase the agility of work forces, sharing best practices among the industries to drive the development of the skills we know we need, when we need them.	■ Improve usage and sustainability of existing tools and platforms, developed by employers for employers, including: Talent Source Network, EUIAS, Skills Accord, skill register and passport schemes. ■ Identification of key partners and tools that exist already, for example: Tomorrow's Engineer, Diversity and Inclusion Leadership Group, STEM Learning, to raise awareness of our sector. ■ Collaboration where there is benefit in leveraging existing and new relationships.
Improving visibility through a clear and compelling sector value proposition: Continue to build a trusted sector brand and identity beyond individual utilities companies as local employers. Engage with a much broader demographic in a targeted way by understanding the social and economic priorities of these target groups and adapting engagement approach in order to attract, develop and retain the key skills required.	■ Raised awareness of the sector through increased PR, shared success stories and greater visibility of what is happening in our sector. ■ Development of a clear strategy and associated messages targetting students and the people who can influence them (parents, teachers) to raise visibility.
Attracting new talent, retaining skilled applicants and existing talent: Raise the profile and visibility of careers and opportunities in our sector for young people making their first career decision through to more experienced professionals looking to change or progress careers, while retaining skilled talent. Appealing to the five-generation workforce, we have to demonstrate that the sector is worth joining and remaining with, by offering high-quality training with clearly visible opportunities for career progression to a wide range of jobs, life experiences and development opportunities; showing the sector makes a significant contribution both economically and socially and offers more than 'just' a local job vacancy.	■ Commitment of 20 sector employers to engage in a new 12-month pilot programme with Talent Source Network to at least double our talent pool by March 2018 and register 10,000 candidates by 2020. ■ Increase partners from three to at least ten by 2020. ■ Clear career pathways and visibility of these pathways with key stakeholders. ■ Commitment to providing meaningful work experience to students. ■ Increased engagement and visibility of opportunities with educational establishments for example UTCs. ■ Continued commitment to apprenticeships as an entry route to our sector. ■ Support for training investment in the supply chain through the Skills Accord 5% in-training target.
Inclusion and diversity: Have a workforce that is reflective and inclusive of the local communities and societies in which we operate, recognising there is work to be done nationally. The sector recognises it has to broaden the diversity of the workforce, starting with understanding the social and economic priorities of the target group. More targeted action is also going to be required, which will be addressed by specifically seeking to attract women, candidates from BAME backgrounds as well as addressing LGBT and disabled talent, into roles where they are historically under-represented.	■ Identification of key strategic partners supported by an implementation plan to gain access to a diverse talent pool combined with efficient engagement that complements existing company strategies. ■ Measurement and benchmarking of key diversity trends and data in companies in order to implement positive measures and set hard targets. ■ Creation of a diversity and inclusion task group by March 2017 to agree priorities and a plan. ■ Support for key government targets including the apprenticeship diversity target to see a 20% increase in BAME by 2020.
Forward planning to address future skills needs through strategic workforce planning across the whole sector: Ensure that future sector skills needs and regional and local issues are understood. Robust data needs to be established for the whole sector, so future technical and non-technical skills needs can be proactively planned for.	■ Delivery of robust, comparable and consistent, and industry-recognised workforce planning intelligence for each industry. ■ Understanding of future world / workforce requirements.

5 SUMMARY OF SECTOR CHALLENGES

Figure 9: An overview of the energy and utilities sector.

A SNAPSHOT OF THE ENERGY AND UTILITIES SECTOR

3 million

APPRENTICESHIPS

Government apprenticeship starts target by 2020

56%

of National Infrastructure Pipeline projects to be delivered by energy and utilities firms[1]

people are employed in the energy and utilities sector across the UK[2]

SUB-SECTOR EMPLOYMENT[2]

72,000 Power

134,000 Waste management

18,000 Construction-related supply chain

143,000 Gas utilisation

41,000 Gas transmission and distribution

37,000 Manufacturing-related supply chain

54,000 Water

7,000

number of vacancies in the energy and utilities sector, recorded July 2016[3]

NUMBER OF VACANCIES IN THE SECTOR IS INCREASING

36%

of employers report challenges with hard-to-fill vacancies[4]

85%

of hard-to-fill vacancies are challenging because of skills issues[4]

1 Infrastructure and Projects Authority (Spring 2016), 'National Infrastructure Pipeline'.
2 ONS (2016), Business Register and Employment Survey.
3 ONS (2016), ONS Vacancy Survey.
4 UKCES (2016), UK Employer Skills Survey, 2015.

GAS

TOTAL EMPLOYMENT[1]

184,000

DIVERSITY

86%

of the workforce is male and only **4%** from Black, Asian or minority ethnic (BAME) backgrounds.[1]

AGEING WORKFORCE

19%

of the workforce (one fifth) are over 55 years old.[2]

JOB ROLE SHORTAGES

- Electrical and instrumentation engineer
- Engineering graduate trainee
- First line manager
- Mechanical engineer
- Operational response engineer
- Regulation analyst / policy manager
- System control engineer

SKILLS CHALLENGE

Skills challenges identified in the Foresight research (EUSG 2012), show that diversification of technologies and gas sources have led to a skills challenge in:

- Research & development in carbon capture and storage
- Innovation in gas storage
- Expertise in 'big data analytics' due to increasingly intelligent networks
- Improved modelling and customer compliance monitoring capability to handle multiplication of input points
- High-end process engineers to ensure quality and chemical property consistency from new gas sources

POWER

TOTAL EMPLOYMENT

71,700

DIVERSITY

78%

of the workforce is male and only **5%** from Black, Asian or minority ethnic (BAME) backgrounds.[1]

AGEING WORKFORCE

20%

of the workforce (one fifth) are over 55 years old.

JOB ROLE SHORTAGES

- Commercial capabilities
- Commissioning engineer
- Graduate engineer
- Jointers (HV and LV)
- Maintenance technician
- Operational manager
- Overhead linesperson
- Planner
- Power graduate
- Project and contract manager
- Smart meter installer
- Substation fitter

Currently, there are 13 power occupations on the UK's Shortage Occupation List – meaning that the hurdles that have to be overcome in order to recruit non-EEA people into these jobs are somewhat lowered.

- Project manager
- Site manager
- Power system engineer
- Control engineer
- Protection engineer
- Design engineer
- Planning / development engineer
- Quality, health, safety and environment (QHSE) engineer
- Project engineer
- Proposals engineer
- Commissioning engineer
- Substation electrical engineer
- Overhead linesworker

SKILLS CHALLENGE

Professional skills: monitoring and network management skills and customer facing skills

Technical skills: for example research & development and engineering skills

Higher demand for electrical engineering skills, against a backdrop of low STEM subject uptake at advanced levels, means that there must be a focus on boosting higher technical skills, research & development and engineering skills

- Developing an agile workforce that can respond to changing generation profiles
- Monitoring and network management skills will need to be incorporated into existing roles, as well as the necessary customer-facing skills

1 ONS (2016), Annual Population Survey (April 2015 to March 2016).
2 Energy & Utility Skills Workforce Planning data (unpublished).

Impact of Future Technologies on the Energy Industry

In the energy sector, the decarbonisation agenda is driving significant changes to the energy supply market. Traditional sources of supply are being replaced with an ever-divergent mix. The importance of gas in the UK's energy mix has been further emphasised in 2016 and it will continue to play a key role in energy decarbonisation by providing flexible electricity generation and top-up heating over the long term.[1]

The emergence of customer experience as the primary competitive battlefield is driven by digital technology. Armed with smartphone, tablet, laptop and PC, today's consumer is used to transacting at any time, and from anywhere. Expectations of service have never been higher.[2]

Until relatively recently, the big six energy companies have benefited from customer inertia, with a significant proportion of customers rarely, if ever, switching suppliers. With new suppliers entering the market and price comparison becoming easier and more transparent, consumer empowerment is set to take another step forward with the rollout of smart meters and 'smart' household appliances which will give them detailed information about their actual energy consumption and work to optimise their consumption patterns.

Technology is also lowering barriers to entry and creating a new generation of challenger brands to offer something distinct from their longer-established competitors. These challengers can design and tailor services for specific niches in the market; giving them an agility – and an ability to respond to changes in customer expectations – that incumbent players can lack.

Customers themselves, both domestic and commercial, are developing their own solutions at a micro level, with small-scale solar, wind and biomass stations feeding not only their own energy demands but also supplying energy into the grid. This requires an increasingly complex range of 'smart grid' technologies that can ensure that the existing infrastructure can handle multiple-entry points (for gas or electricity).

The more decentralised and remotely managed the asset base becomes, the greater reliance there is on technology for an instant response to demand and to underpin a company's ability to service its customers.

A wide range of technological solutions are currently being developed in response to these drivers which could revolutionise how energy is supplied and demanded including: smart grids, power storage, electric vehicles, new power generating technologies, robotics and automation, micro-grids and third-generation biofuels.

Furthermore, the issue of climate change and the need to become more resilient to its effects will infiltrate all industries within the energy and utilities sector seeing increasing investment in advanced meteorological expertise and tools to allow for more proactive and accurate forecasting of extreme weather events. Companies will need the ability to interpret and apply this information in the context of their own activities and use it to inform and prioritise specific actions to minimise the impact.

The implications for skills in relation to the development, installation, operation and maintenance of these technologies revolve around: high-level science (particularly physics, geography and hydraulics) and engineering skills, customer service and stakeholder engagement, data analytics, telecommunications, digitisation, marketing and communications, business and commercial, and project and programme management.

In respect of smart grid technologies, the perfect 'smart grid engineer' is therefore somebody who has a deep understanding of power systems and advanced physics, but who, at the same time, has an in-depth knowledge of software architecture and development, control systems automation, prototyping and the regulatory environment.[3] While technicians will need some skills development around the technologies they are installing, they will continue to need the traditional skills associated with this work. Increasingly it is likely that the sector will need skills and labour from other industries including data analytics and data mining, telecoms and electric vehicle installation.

1 Future Energy Scenarios, National Grid, July 2016.
2 No going back: five disruptive trends reshaping the utilities sector, KPMG, September 2016.
3 Skills for Smart Grids in Scotland, Energy & Utility Skills Limited, March 2016.

WASTE

TOTAL **EMPLOYMENT**[1]

134,300

DIVERSITY

83%

of the workforce is male and only **5%** from Black, Asian or minority ethnic (BAME) backgrounds.

AGEING **WORKFORCE**

19%

of the workforce (one fifth) are over 55 years old

JOB ROLE SHORTAGES

- Bid manager
- Chemist
- Clinical waste operative
- Contract manager
- Drivers
- Engineers: electrical & mechanical with energy from waste specialisms
- Financial modeller
- Fitter in transfer station
- Maintenance engineer
- MRF supervisor
- Plant operator
- Process engineers and technicians for energy from waste
- Supervisor – transfer station
- Technical chemist
- Weighbridge operator
- Apprentice

SKILLS CHALLENGE

Some key skills challenges for the waste management sector include:

- Many low grade manual skills will be superseded by higher-level skills relating to processing, recycling and energy recovery
- Increasing demand for testing, sampling and analysis skills with qualifications in STEM subjects
- Commercial expertise will become essential as waste acquires a value and becomes a source of energy
- The blend of the work in the pipeline is changing with more innovative techniques requiring a different mix of skills
- There is increasing demand for cross-sector skillsets as sector boundaries blur

1 ONS (2016), Annual Population Survey (April 2015 to March 2016).

Impact of Future Technologies on the Waste Industry

There is an urgent need for change in a world with a growing population that is consuming more, seeing energy demand increase by 50-60%; and food demand up by 60%; by 2050. It would require the resources of nearly three Earth-sized planets for future populations to consume at the rate we currently do in Europe.[2]

This makes the traditional 'make-use-dispose' linear model of production and consumption unsustainable, creating the need for a circular economy consisting of a continuous process of reduce, re-use and recycle, resulting in traditional waste management companies entering new markets, particularly in energy and reprocessing – their role being to return valuable resources back into the economy.

The waste management sector is becoming highly technology and science based by:

- increasing the efficacy and efficiency of separating and sorting techniques
- producing energy using biological and chemical processes
- growing of the 'energy from waste' market including thermal technologies and broadening the development of highly sophisticated biological technologies (e.g. microbes to convert carbon-rich waste into biofuel via a gas fermentation technology, and enzyme-based solutions that convert used cooking oil into bio-diesel)

The skills shift sees future needs including: high-level engineering, chemical, biological, business and commercial, regulatory, testing, sampling and analysis skills and customer service and stakeholder engagement skill sets.

Research shows that a shift to a more circular economy in the UK could create between 200,000 and 500,000 jobs by 2030.[3]

2 Resource revolution: Creating the future, Wrap, 2015.

3 Ibid.

WATER

TOTAL **EMPLOYMENT**

53,500

DIVERSITY

73%

of the workforce is male and only **5%** from Black, Asian or minority ethnic (BAME) backgrounds.[1]

AGEING **WORKFORCE**

18%

of the workforce (one fifth) are over 55 years old.

JOB ROLE SHORTAGES

- Chartered engineer
- Construction project manager
- Data scientist
- Electrical technician and incorporated engineer
- Electrician
- Estimator
- Instrumentation control and automation (ICA) technician
- Programme and portfolio manager
- Smart networks (technician grade)
- Smart networks manager (senior developer grade)
- Quantity surveyors / senior surveyor

SKILLS CHALLENGE

Skills challenges identified by the Foresight research (EUSG, 2012) for professional & technical skills:

- Commercial strategy & negotiation
- Regulatory analysts
- Legal experts
- Stakeholder management
- Research & development in chemical and biological engineering
- Water efficiency & leakage

1 ONS (2016), Annual Population Survey (April 2015 to March 2016).

Impact of Future Technologies on the Water Industry

Sanitation and access to wholesome drinking water for 2.4 billion people and 1.8 billion respectively who do not currently enjoy that access must be the top global priority for the water sector.[2] This coupled with water scarcity, changing demographics, and the need for operational efficiency are amplified by the more extreme and more unpredictable nature of weather events and climate change. The level of risk that climate change and unpredictability introduces can impact the complexity and costs around the water cycle, infrastructure and demand management. Increasing flood risk management is a top priority.

The sector is adapting, and must continue to do so, to ensure that it can continue to meet the needs of people, businesses and the environment.[3] New technologies, processes, partnership working and a deeper understanding of how laws, and regulations are formulated and enacted will provide new opportunities and will require new skill sets not previously seen in the industry. Technologies that are high on the agenda of all water and waste water companies include:

- Smart monitoring
- Artificial intelligence and autonomous systems
- Nanotechnology in water filtration
- Membrane chemistry
- Modular hybrid activated sludge digesters
- Seawater desalination

This will see the demand for skilled labour increasing; requiring high-level science (particularly chemistry, biology, geography and hydraulics) and engineering skills as well as customer service and stakeholder engagement, data analytics, telecommunications, business and commercial skills. With regards to data management, there will be a need to upskill the workforce not only on the analytics, but for everyone to understand how the use of data can drive business performance improvement.

It is possible that the impact of technological developments in the areas of robotics and smart technologies on the network could lead to the automation of some manual tasks with artificial intelligence potentially replacing some professional roles over time. Similarly, with customer service operations moving largely online (creating a more accessible and democratic engagement process), this could reduce the need for large-scale call centre activities.

New technologies (in response to a number of drivers) and increasing competition are leading to higher customer expectations, meaning that new opportunities are opening up.

2 United Nations, http://www.un.org/sustainabledevelopment/wp-content/uploads/2016/08/6_Why-it-Matters_Sanitation_2p.pdf, accessed on 10th January 2017.

3 Creating a great place for living: Enabling resilience in the water sector, DEFRA, March 2016

6 GLOSSARY

Apprenticeship levy
Part of the Government's funding framework for investment in apprenticeships and is the amount companies with an annual pay bill over £3m have to invest each year

Apprenticeship
National training programme comprising a Level 2 and upwards vocational qualification combined with full-time paid employment in a job related to the qualification

Apprenticeship Standards
The new English apprenticeship standards will replace NOS and SASE frameworks. These are created by industry employer-led groups known as "Trailblazers"

BAME
Black, Asian or Minority Ethnic

DfE
When used in the context of England:
Department for Education
When used in the context of Northern Ireland:
Department for the Economy

EUIAS
Energy & Utilities Independent Assessment Service

Employer-led awarding body focused on qualifications and training for the utilities sector

Energy & Utilities Skills Partnership
Partnership made up of companies from the energy and utilities sector focusing on skills development for the sector

Energy & Utility Skills Group
Membership organisation for the utilities sector developing and driving skills and competencies for the wider sector

EngineeringUK
Sector awareness organisation for the engineering sector

GCHQ
Government Communications Headquarters

NIDP
National Infrastructure Delivery Plan – the Government's infrastructure and building plan for the next five years

NOS
National Occupational Standards, which are being phased out in England and replaced with apprenticeship standards, but will continue to be used in the devolved nations for the delivery of apprenticeships

NEET
Not in Education Employment or Training – refers to a specific cohort of people aged 16–24 in the UK

NSAP
National Skills Academy for Power, part of the Energy & Utility Skills Group

SDS
Skills Development Scotland - the Scottish funding council

STEM
Collective term for science, technology, engineering and maths subjects and skills

STEM Learning
Collective learning organisation driving uptake of STEM subjects. Formerly called 'STEMNET'

Talent Source Network
Talent management network run by
Energy & Utility Skills Group

UK Plc
Collective reference to the UK commercial community

UKCES
UK Commission for Employment and Skills

UTC
University Technology College

EMPLOYER SUPPORT: COUNCIL MEMBERSHIP

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