In the Public Eye
Nuclear Energy and Society

..Delivering a successful and sustainable nuclear industry...
Cover image shows students from Great Yarmouth College with Sizewell B Visitor Centre guide Lin Carter in front of the stations' iconic dome.

Image courtesy of EDF Energy
SUMMARY

Access to affordable, reliable and clean energy is fundamental to modern life and there is now broad political support for nuclear power within a diverse low carbon energy mix. Public opinion polls reveal support for nuclear energy as part the mix, but factors including cost, environmental impact, and waste management can influence this. This report outlines a high-level strategy for Central and Welsh Government, industry and other stakeholders to work together to ensure that public confidence in nuclear power as part of a low carbon energy mix is strengthened, and that the benefits of nuclear energy to society in terms of electricity generation, jobs and the economy are recognised.

The strategy will develop a consistent nuclear narrative highlighting the contribution nuclear energy makes to benefit society. It will adopt best practice principles of public engagement to ensure clarity that enhances an appreciation of energy matters; to build trust through mutual respect, openness and transparency; to enable dialogue that provides opportunities to listen and address issues in the public mind; and to facilitate consultation with local stakeholders on the practical outworking of government policy with respect to nuclear. The strategy will harness existing activities and resources, including the nuclear workforce, trade union members and independent experts. The strategy will remain flexible and be targeted through modern channels at national, local and individual level.

It is recommended that a small, senior Steering Group (consisting of communication professionals from Council membership) be established to develop and deliver a detailed public engagement and communications programme on nuclear energy. The Steering Group should develop a ‘Charter’, to be signed by CEOs, that articulates the sector’s commitment to best practice public engagement principles. Development and delivery of the detailed strategy must be informed by research and will require a sufficient level of resource to enable the Steering Group to fulfill its mission.
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..Delivering a successful and sustainable nuclear industry...
1 INTRODUCTION

The United Kingdom faces a triple energy challenge. First, energy security must be maintained to provide the power needed for industry to grow and to provide the heat and light needed for homes. Secondly, energy costs must be managed to ensure that power, heat and light are affordable by society. Thirdly, energy generation must reduce emissions of greenhouse gases, including carbon dioxide, to help combat the global impact of climate change. Nuclear power is essential to the UK energy mix because it addresses these three challenges by meeting the country’s energy needs, enhancing security and diversity of supply and providing a reliable and continuous low carbon source of electricity which is competitive with other low carbon sources. It is Government policy that new nuclear power stations should have a role to play in the energy mix alongside other low-carbon sources\(^1\). At the moment, nuclear energy delivers around 20% of the UK’s electricity needs and has the potential to increase this to as much as 40% to 50% by 2050\(^2\).

There is broad political support for nuclear power as part of a diverse energy mix that will underpin the move towards a low carbon UK economy. So the question is not if but rather how much nuclear power will be deployed, and that will depend on its competitiveness as a technology in relation to alternatives and on a meaningful dialogue and consultation with stakeholders at local, regional and national level. Industry currently plans to build 16GW of new nuclear generating capacity; an investment of potentially around £60bn which will create opportunities for UK businesses and lead to new, long term and high quality jobs – between 30,000 to 40,000 – often in regions of the country where they are most needed. A thriving home market is essential to provide a platform for winning nuclear business overseas.

Today, the UK nuclear industry provides business opportunities and supports well over 60,000 jobs\(^3\). The industry is distributed across the country, with around 10% of nuclear jobs based in the Southeast, 15% in the Southwest and 40% in the Northwest. The industry is multi-faceted; as well as proposed new nuclear power stations in Somerset, Suffolk, Cumbria, South Gloucestershire and Anglesey, the industry is also involved in extending the life of a number of existing plants, and therefore ensuring the UK is able to obtain the maximum benefit from those plants for many more years to come. The industry is also delivering fuel cycle services, which involves fuel manufacturing and developing new technologies to extract the most energy out of the spent fuel previously used in nuclear power stations. In addition, the nuclear sector is also, like other energy sectors (such as coal, gas, and oil), decommissioning old plant and dealing with waste. Increased efforts in nuclear Research and Development (R&D) are being made in order to better secure the future of all these parts of the sector. The UK has high calibre scientific and technical nuclear expertise, which can help ensure that nuclear energy remains a competitive source of low carbon energy for many decades to come.

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\(^3\) Data from the Nuclear Industry Association (www.niauk.org/nia-industry-maps)
Nuclear energy is just one of a plethora of technologies being developed and deployed in the twenty first century, and society’s awareness of technology development and deployment across a range of fields is fundamental to the acceptability of that technology in day-to-day life. Technological innovations all require the confidence of the public to gain acceptance; nuclear energy is no different.

Regular public opinion polls undertaken by Ipsos MORI, DECC Public Attitude Tracker and the Nuclear Industry Association, reveal around 80% of those asked support a diverse mix of sources to ensure a reliable supply of energy. The level of support for different energy sources varies, with particularly strong support for renewable energy, Figure 1. Public support for nuclear energy has been slowly growing over the last 10 to 15 years, Figure 2; perhaps because of its good safety and reliability record and the contribution it makes to meeting the UK’s electricity needs.

![Figure 1. Level of support for different energy sources to generate the UK’s electricity, July 2012 to March 2014](image)

![Figure 2. Public Attitudes to Nuclear Energy: to what extent would you support or oppose the building of new nuclear power stations in Britain to replace those that are being phased out](image)

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5 Ipsos MORI (2013) Nuclear Energy Update Poll.
There is evidence that while the public feel relatively well informed about renewable energy, they do not feel well informed about nuclear power⁶. A sizeable minority, just over one in four, say that the risks associated with nuclear power outweigh the benefits with issues of safety and impact on health being commonly mentioned concerns. The Fukushima nuclear accident in 2011 did impact on public support, Figure 2, and this reinforces the importance for the sector not to take society’s support for nuclear energy for granted, especially in relation to nuclear new build.

A considerable body of research has been carried out into public attitudes to different energy sources and the importance of engaging the public in the transformation of the UK energy system has been highlighted in the recent Energy Research Partnership report⁷. Studies by researchers including Pidgeon et al.⁸, for example, reveal a complex underlying mix of factors that can influence this support in the context of nuclear power. These include the public’s trust in the governance of risk by the industry and the regulatory regime; the historical context of nuclear energy including previous links with defence; the media reporting of nuclear incidents; and the characteristics of hazard. Therefore, while support for nuclear energy as part of a diverse low carbon energy mix remains it is characterised as a ‘reluctant acceptance’, perhaps reflecting the tension that exists between the importance of nuclear power within the low carbon energy mix on the one hand and underlying worries regarding nuclear waste and nuclear safety on the other.

The UK’s Nuclear Industrial Strategy⁹ recognises the importance of public awareness of nuclear energy’s capacity to help meet the UK’s energy needs now and in the longer term. The Strategy includes an action for the Nuclear Industry Council to “work with universities, research institutes and others on programmes that improve understanding of radiation and how it is used in society and managed within the nuclear industry”.

This report addresses that action, setting out a high level strategy to maintain and enhance public confidence in nuclear energy. The purpose is two-fold: first, to ensure that public confidence in nuclear power as part of a low carbon energy mix is maintained and strengthened, and secondly to highlight the benefits of nuclear energy to society in terms of electricity generation, skills and strengthening the economy.

2 PUBLIC ENGAGEMENT

Public views of a particular technology are an important factor in the political and industrial mandate to develop and implement that technology for the benefit of society. Public attitudes to technology across a range of fields are fundamental to their use in everyday life. Attitudes towards nuclear power and its acceptability as a component of the UK’s emerging low carbon energy mix are no different; it is therefore critically important that

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Central and Welsh Government, industry and the wider expert community engage effectively with the public in this field.

2.1 The Public

Engaging with the public is not straightforward, however, because the ‘public’ in its widest sense is not homogeneous but a diverse mix of old and young, of men and women, of rich and poor from a variety of ethnic backgrounds. People respond differently to communications about a given technology and to the communication channel used. An Ipsos MORI study on public attitudes to science funded by the Department for Business Innovation and Skills\(^\text{10}\) identified six different public attitudes to technology that each exhibit a bias in age, gender, ethnicity and/or social group:

1. **Confident Engagers**: one in ten of the population (10%). Tend to be 33-54 and affluent.
2. **Distrustful Engagers**: around one in seven of the population (15%). Tend to be men aged 55+ and affluent.
3. **Late Adopters**: around one in four (23%) of the population. Tend to be women aged 16-34.
4. **Concerned**: around one in five (20%) of the population. Tend to be women aged 16-34, less affluent and from black and minority ethnic communities.
5. **Disengaged Sceptics**: around one in six of the population (17%). Tend to be women and less affluent with fewer qualifications.
6. **Indifferent**: one in six (16%) of the population. Tend to be retired older people, often less affluent (C2DEs).

Although addressing technology in general, this mix has a read across to attitudes to nuclear energy; so a strategy to enhance public engagement with nuclear energy must ensure that appropriate channels are developed to engage target audiences effectively.

For example, polling suggests that men are more than twice as likely as women to support the building of new nuclear power stations in Britain to replace those being phased out; the overall impression of the nuclear industry is also most favourable amongst men; for women and young people this is less so\(^\text{11}\). This may reflect the observation that women generally feel less informed about science than men and more 16 to 24 year olds feel that the risks outweigh the benefits\(^\text{12}\). Effective engagement with women and young people, perhaps to encourage a diverse nuclear workforce, should be appropriately channeled through interactions with, for example, Women In Nuclear\(^\text{13}\), through schools outreach programmes, engagement with teachers and careers advisors, the Nuclear Industry Association’s re:generation campaign etc.

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\(^{10}\) Ipsos MORI (2014) Public Attitudes to Science.

\(^{11}\) Ipsos MORI (2013) Nuclear Energy Update Poll.


\(^{13}\) See http://www.win-global.org and www.womeninnuclear.org.uk (site under construction)
Maintaining and strengthening public confidence in nuclear energy requires Central and Welsh Government, industry and others within the public/private sector alongside academia to engage effectively with society in its broadest sense using appropriate channels and nuances. For example, engaging with the public should consider communications at a national, local and individual level. Understanding the differences between national support for a particular nuclear facility on the one hand and the local population’s view on the other should be reflected in public engagement plans; perhaps emphasising a greater need for dialogue and consultation at the local level where the practical outworking of government policy affects local populations far more than it does at national level.

2.2 Approaches to Public Engagement

Since the landmark report by the Royal Society in 1985 on the public understanding of science there has been a considerable evolution of understanding on how best to engage with society with respect to science and technology. A review of this developing field has therefore been undertaken to provide an evidence base with which to underpin this strategy and a summary of this is provided in Annex 1.

This review highlights the need for the sector to be clear in all communications with the public, using a range of approaches appropriately targeted to particular parts of society. The sector must build public trust in communications through mutual respect, making the best use of those who are trusted by society in public engagement, e.g. the nuclear workforce who are engaged at the front line in the sector and independent experts based in academic institutions.

The review highlights a need for dialogue and not a one-way communication approach. In this context, dialogue does not reflect a need to engage on whether or not nuclear is part of the UK energy mix; this is reflected in Government Energy Policy. Rather, dialogue reflects the need to understand issues that are uppermost in the public mind and to respond to these more effectively. As highlighted in the Sciencewise report on public dialogue in science and technology:

“... where the reaction of scientists, politicians and civil servants would once have been just to broadcast the facts of science more loudly, there is now an awareness of the need to listen and to talk openly about what such things mean for our collective future.”

The review also highlights the value of meaningful consultation enabling society to participate in the practical outworking of government policy with respect to nuclear, e.g. in the context of local stakeholder groups based near nuclear facilities, where consultation can positively influence how a facility might be developed, operated or decommissioned.

Society is changing and approaches for engaging with the public must change too. Five years ago, social media was the purview of the young; today, Facebook, Twitter and

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Pinterest represent some of the most effective means for communication and dialogue; in five years time these may be obsolete and new forms of communication and dialogue will have developed.

The field will continue to evolve rapidly and it will be important to conduct research and keep abreast of the latest thinking with regards best practice in public engagement and science communication. The nuclear sector’s approach to public engagement must be informed by the most up to date research and methods.

3 OUTLINE STRATEGY FOR PUBLIC ENGAGEMENT WITH NUCLEAR ENERGY

Nuclear energy makes an important contribution to providing power to our homes, factories, hospitals, schools, offices, shops and all other places where we live and work. The things we take for granted – switching on the lights, heating our homes, working at our computers, for example – depend on the contribution made by nuclear energy. Without it, the UK would struggle to meet the country’s needs, which would impact on our economy and standard of living, and create uncertainties for the future.

The overarching aim of this outline strategy for public engagement with nuclear energy is to ensure that public confidence in nuclear power as part of the emerging UK low carbon energy mix is maintained and strengthened. The strategy, articulated in four parts below, will also highlight the benefits of nuclear energy to society in terms of electricity generation, skills and strengthening the economy.

First, the strategy will develop a nuclear narrative that connects energy policy objectives to the role that nuclear energy plays in delivering low carbon secure electricity and jobs, and that addresses the underlying risks to public support.

Secondly, the strategy will provide mechanisms in which Central and Welsh Government and industry engage with the public in a manner that values best practice principles in communications: providing clarity, building trust, valuing dialogue and facilitating consultation.

Thirdly, the strategy will harness existing activities and resource in a way that increases the effectiveness of the currently fragmented approach to public engagement, including aligning with the planned timetable of new nuclear build and waste management, reflecting the development in nuclear R&D and in responding effectively to unexpected nuclear events.

Finally, the strategy will be flexible; informed by the latest research and understanding of public attitudes and how best to engage with society.
3.1 Developing a Nuclear Narrative

There must be an engaging but factually accurate, clear and consistent energy narrative agreed across the whole industry that highlights both the benefits of nuclear power and addresses issues in the public mind. The nuclear narrative should articulate why the world is a better place with nuclear energy than without, must make commonsense, and be effectively tailored and responsive to particular audiences. The communications steering group will develop this messaging, and test it with key audiences before ‘going live’. Below is some sample messaging that will be considered in developing the nuclear narrative:

(a) Energy Security
- “Energy is the golden thread that connects economic growth, increased social equity, and an environment that allows the world to thrive.” UN Secretary-General Ban Ki-moon
- Electricity is essential for growing food, cleaning our water supplies, providing medicines and healthcare, and keeping our children and old folk warm.
- Providing secure supplies of electricity is getting more difficult, not easier, since we have to protect the environment and make sure that clean water, hospitals, transport, heating and so on are all available when we need them.
- If we want our children to live as long and healthily as we do, we have to make sure they have the same access to reliable energy as we do.
- Nuclear is already the UK’s largest source of clean domestic electricity, providing around one fifth of total power, round the clock.
- Fuel costs are low, helping to make household energy prices stable and predictable.

(b) Growth
- Ensuring that secure and well-paid jobs are available with good career development opportunities to the UK workforce is important for economic recovery.
- Massive investment in rebuilding our energy infrastructure will create thousands of skilled jobs, and bring major socio-economic benefits.
- The UK nuclear industry employs over 60,000 people directly, with tens of thousands more jobs indirectly supported.
- The projected new nuclear build projects will create around 40,000 new UK jobs.
- Home to world-class facilities, our highly experienced workforce delivers exemplary research and development, decommissioning, radioactive waste management and high tech’ manufacturing.
- The UK is a world leader in decommissioning technology, with more than £3bn spent in the UK each year.

(c) Clean energy
- Climate change puts us all at risk, but it hurts the poor first – and worst.
- Greenhouse gas emissions, including carbon dioxide, are increasing the risk of storms, flooding and extreme weather. Cutting pollution will help save lives and reduce the risks of climate change.
- Nuclear is already the UK’s largest source of clean electricity, providing around one fifth of total power.
• Nuclear power does not pollute the environment, and generates round-the-clock clean power to light our homes, streets, shops and hospitals.
• Nuclear energy produces no carbon or air pollution.

(d) Affordability
• Fuel costs are low, helping to make household energy prices stable and predictable.
• Keeping energy bills as low as possible helps to reduce fuel poverty and strengthens our economy.
• Existing nuclear plant around the UK provides the lowest-cost “round the clock” low carbon electricity source.
• The upfront capital costs for new nuclear build are high and therefore require some kind of long-term price stability for the electricity.
• Building major new infrastructure, like new nuclear plants, is an investment for the future.
• Over their lifetime, new nuclear plants will generate clean, round the clock power for more than 60 years, offering long-term value for businesses and consumers.
• Nuclear and renewables are domestic sources of electricity that protect consumers from price shocks.

(e) Safety, Security & Safeguards
• All big engineering projects, whether aircraft, bridges, buildings or nuclear power stations, are strictly regulated to make sure they are safe.
• The UK is a global exemplar with one of the most highly respected and stringent nuclear regulators in the world.
• Nuclear scientists are best placed to assess the risks.
• Nuclear energy remains safer than almost all other forms of electricity generation (on a par with onshore wind).
• The global use of nuclear energy has saved an estimated 1.8 million lives by replacing much more harmful fossil fuel generation16.

(f) Responsible
• As an industry, we are committed to cleaning up behind us.
• We are the only energy industry that takes full responsibility for its waste.
• Today, we manage nuclear waste very efficiently and cost-effectively.
• Clean up represents a small fraction of the overall costs for new nuclear plants.
• Nuclear waste management and environmental restoration are well-understood and straightforward day-to-day operations.
• Huge strides of progress are being made in returning former sites for public use.
• The oldest plants (Sellafield and Dounreay), which were part of our national defence during the Cold War, remain extremely challenging, and continue to demand the lion’s share of the clean-up budget.
• Like most counties with nuclear energy plants, the UK intends to permanently dispose of its long-lived waste in deep, stable rock.

3.2 Applying Best Practice Principles of Public Engagement

The fundamental issue here is to ensure that the nuclear industry acts on the best principles in dealing with all stakeholders, including the wider public. This is a matter of integrity, of winning respect from all of those who engage with the industry at every level so that stakeholders feel that they have been genuinely listened to. It is not a matter of tendentious strategy, though obviously the nuclear industry strongly believes in its centrality in meeting our energy needs and wishes to advance that case. Based on the best practice outlined in Annex 1, the strategy will adopt four principles to enhance public attitudes with nuclear energy:

1. Ensure clarity in communications to enhance an appreciation of energy matters, recognising the social, economic and environmental benefit of nuclear;
2. Build trust in those who communicate to enhance understanding of nuclear matters, recognising the need for respect, openness and transparency;
3. Enable dialogue\(^{18}\) with the public to provide opportunities to listen and address those issues which are in the public mind, recognising the value of challenge;
4. Facilitate consultation with local stakeholders and those who may have influence on nuclear energy matters, recognising the need to be a good neighbour.

Ensuring these principles are adopted across the sector and implemented effectively within communication plans will necessitate:

A. Commitment at a senior-level to align industry and government public engagement programmes with the four principles;

\(^{17}\) [http://newsroom.edfenergy.com/Media-Library/Infographic-Hinkley-Point-C-Number-Power-ae.aspx](http://newsroom.edfenergy.com/Media-Library/Infographic-Hinkley-Point-C-Number-Power-ae.aspx)

\(^{18}\) In this context, ‘dialogue’ does not reflect a need to engage on whether or not nuclear is part of the UK energy mix; this is reflected in Energy Policy. Rather, dialogue reflects the need to understand issues that are uppermost in the public mind and to respond to these more effectively.
B. Support for the workforce to participate in public engagement, particularly scientists and engineers working in government, industrial and university laboratories; and
C. Provision of training for those who wish to participate in public engagement.

The effectiveness of the strategy to enhance public engagement in nuclear energy will also be measured, e.g. through the ongoing reference to public opinion polls such as those undertaken by Ipsos MORI and the regular DECC public attitudes survey.

3.3 Harnessing Existing Activities and Resource

A range of initiatives across Central and Welsh Government, industry and academia are already successfully engaging with the general public including young people, the media and the supply chain. Annex 2 includes links to over 100 websites that are available to the public to provide information on nuclear-related matters. Examples include:

- **Nuclear Industry Association** educational resources and background information including the people behind the power series [http://www.niauk.org/the-people-behind-the-power](http://www.niauk.org/the-people-behind-the-power).
- **EDF Energy** has opened new visitor centres at nuclear power stations around the country to communicate how a nuclear power station operates. Pre-arranged site tours of the power stations can be arranged.
- **The Department for Energy and Climate Change** My2050 schools toolkit, including the 2050 pathways calculator at [http://my2050.decc.gov.uk](http://my2050.decc.gov.uk).
- **The National Nuclear Laboratory** works with the Smallpeice Trust to deliver nuclear summer schools in association with the University of Lancaster and Manchester.
- **Urenco** science workshops and web-based information portal for young people that includes fun facts, an energy game and quizzes at [http://www.urenco.com/richie/](http://www.urenco.com/richie/).
- **Sellafiel Ltd.** is engaged in education programmes, encouraging children into Science Technology Engineering and Mathematics (STEM) subjects (Figure 4) and is opening a visitor attraction in Whitehaven in 2014.
- **The University of Manchester’s Dalton Nuclear Institute** energy card game and an on-line reactor simulator at [http://www.dalton.manchester.ac.uk/engage/nrs/](http://www.dalton.manchester.ac.uk/engage/nrs/).
- Outreach programmes delivered by academia, particularly associated with RCUK-sponsored research grants.

International examples of good practice are also available and include:

- **Swiss Nuclear Forum**: Discover the nuclear power plants of the world with nuclearplanet! - [http://www.nuklearforum.ch/de/en/nuclearplanet](http://www.nuklearforum.ch/de/en/nuclearplanet)
These and related initiatives already provide excellent opportunities and resource for public engagement though there is no unified approach for public engagement across the sector; activities are fragmented. This fragmentation has in some instances led to a lack in clarity of message, insufficient opportunity to share best practice, and limited impact on public attitudes to nuclear energy. The strategy will harness existing activities and resource better to improve the clarity of the nuclear narrative whilst also providing opportunities for different emphases in communications to address issues of interest to the public locally.

Greater coordination in public engagement across the sector will help to address these issues by ensuring consistency and clarity in all communications, providing effective integration of existing initiatives, and the sharing of best practice. Coordination will widen the reach of the existing communication initiatives, and enable the sector to respond more effectively to current events.

The people who work in the nuclear industry are often the sector’s best ambassadors. The industry’s highly skilled and motivated workforce and trade union members personify the commitment to best practice, rigorous safety standards and world-class expertise that is demanded in the nuclear sector. The strategy will help the nuclear workforce to be empowered and enabled to contribute more effectively to public engagement.

Recognising the value of independent expertise, we will engage with independent university researchers, the media and wider interest groups to address those issues uppermost in the public mind through dialogue that builds mutual respect, understanding and trust. We will develop our communications on STEM career opportunities for young people, particularly highlighting the opportunities for women and ethnic minorities.
3.4 Maintaining Flexibility

Research into public attitudes to nuclear energy and developments in communication channels will inform the development and delivery of this strategy. Whilst ongoing polling will provide metrics to help assess the effectiveness of the strategy, it will be important to target research to frame an up-to-date nuclear narrative, maximise the relevance to current public attitudes, and inform the development of increasingly effective means of engagement at national, local and individual level.
4 SUMMARY AND RECOMMENDATIONS

This outline strategy has set out a proactive approach to public engagement that is aimed at ensuring that public confidence in nuclear power as part of a low carbon energy mix is maintained and strengthened, and that the profile of long-term stable and rewarding career opportunities are raised to help develop a diverse nuclear workforce.

The strategy builds upon current best practice in public engagement including the four principles of clarity, trust, dialogue and consultation and recommends both senior level commitment and workforce engagement in the strategy.

Harnessing the existing activities and resources is crucial to deliver an effective strategy for public engagement, though this will require a greater level of coordination across the sector to ensure consistency of messaging and sharing of best-practice tools.

The value of the existing nuclear workforce alongside independent experts in effective public engagement is recognised, both to publically maintain confidence in nuclear power and to help develop a diverse and skilled workforce for the future.

The development and delivery of this strategy will require the commitment and support of government, industry and academia to:

- Ensure the four principles of public engagement are built into future communication strategies;
- Coordinate communication activities around public engagement across the nuclear sector in the UK;
- Develop an agreed narrative and messaging that is not just about the science but also about people, health, leisure ethics and social responsibility; and
- Highlight career opportunities to develop a diverse workforce.

The Nuclear Industry Council is invited to approve the following recommendations:

1) That a small, senior Steering Group (consisting of communication professionals from Council membership) should be established to develop and deliver a more detailed public engagement and communications strategy on nuclear energy;
2) That the proposed Steering Group develop a best practice ‘Charter’ on public engagement principles to be signed by CEOs across the industry; and
3) Research is undertaken to inform the development and delivery of the public engagement and communications strategy on nuclear energy.

The Council is also invited to note:

4) That there will need to be a sufficient level of resource to enable the Steering Group to fulfill its mission.
ANNEX 1

Summary of Best Practice in Public Engagement

The 1985 Royal Society report\(^{19}\) highlighted the need for the public to have an adequate understanding of scientific principles and for scientists to learn to communicate with the public, and for the media, in its broadest sense, to play an important role in communications. The implication of this to nuclear energy is that the sector must be clear in all communications with the public, using a range of approaches appropriately targeted to particular parts of society. For this to be carried out effectively, the nuclear industry will need to meet the challenge of translating many of its abstruse technical and scientific complexities into lucid common sense language that enables the public to grasp key messages.

The Science and Society report of the House of Lords Select Committee on Science and Technology\(^{20}\) indicated the need for developing trust between the public and those who communicate on science and technology. As illustrated in Figure A1, evidence suggests that two out of three people in Europe believe that scientists working in Universities or Government Laboratories are best qualified to explain the impact of science and technological developments on society\(^{21}\). The implications of this to enhancing public engagement with nuclear energy, is that the sector must build public trust in communications, making the best use of those reputable interlocutors.

The House of Lords report also emphasised a ‘new mood for dialogue’ between institutions and the public that is ‘better informed, better structured and more inclusive’. As noted in ‘A little more conversation’, part of the Sciencewise report on public dialogue in science and technology\(^{22}\):

“… where the reaction of scientists, politicians and civil servants would once have been just to broadcast the facts of science more loudly, there is now an awareness of the need to listen and to talk openly about what such things mean for our collective future.”

The implications of this to enhancing public engagement with nuclear energy is that the sector must provide space and opportunities for conversation; dialogue is a two-way process, involving engagement between those who may hold different views on nuclear energy. Dialogue does not reflect a need to engage on whether or not nuclear is part of the UK energy mix; this is reflected in Energy Policy. Rather, dialogue reflects the need to understand those issues uppermost in the public mind and to respond to these effectively.

\(^{19}\) The Royal Society (1985) The Public Understanding of Science.
Finally, consistent with the Aarhus Convention\textsuperscript{23}, there is a growing recognition that effective engagement requires not only dialogue but also consultation with the public, enabling society to participate in the shaping of policy and practice. Initiatives such as the consensus conferences, which originated in Denmark in the 1980s, community advisory boards, and focus groups all facilitate the participation of the public in a manner that leads to better decisions about issues involving complex science and technology. This clearly points to the need to embed effective consultation, such as through local stakeholder groups, should be embedded in the communication strategy.

ANNEX 2

Examples of Public Engagement Initiatives with respect to UK Nuclear Energy

Electricity grid statistics:
GridWatch - http://www.gridwatch.templar.co.uk/
Ecotricity - http://www.ecotricity.co.uk/our-green-energy/energy-independence/uk-grid/live

Reactors
AP1000 website - http://ap1000.westinghousenuclear.com/index.html
EPR website - http://www.epr-reactor.co.uk/scripts/ssmod/publigen/content/templates/Show.asp?P=57&L=EN
UK ABWR website - http://www.hitachi-hgne-uk-abwr.co.uk/

Industry – Reactors and new nuclear build
EDF Energy:
Inside a nuclear power station - http://www.edfenergy.com/energyfuture/key-info/nuclear-power-plants

Horizon Nuclear Power:
Nuclear power facts - http://www.horizonnuclearpower.com/nuclear-power-facts
Wylfa - About our site - http://www.horizonnuclearpower.com/wylfa
Oldbury - About our site - http://www.horizonnuclearpower.com/oldbury
Delivering a successful and sustainable nuclear industry...
Delivering a successful and sustainable nuclear industry...

Industry supporting bodies
Nuclear Industry Association:
Jobs Map - http://www.niauk.org/nia-industry-maps
The people behind the power - http://www.niauk.org/the-people-behind-the-power
The Capability report - http://www.niauk.org/uk-capability
Industry Link (magazine) - http://www.niauk.org/industry-link
A-Z glossary - http://www.niauk.org/a-to-z-glossary
SC@nuclear - http://www.nuclearsupplychain.com/

Nuclear Institute:
Nuclear Reactor Simulator - http://www.nuclearinst.com/Nuclear-Reactor-Simulator
Nuclear Future (magazine) - http://www.nuclearinst.com/NuclearFuture

World Nuclear Association:

NOF energy:
Nuclear (overview) - http://www.nofenergy.co.uk/energy-industry/nuclear.html
Nuclear decommissioning (overview) - http://www.nofenergy.co.uk/energy-industry/nuclear-decommissioning.html

Government
UK Trade & Investment (UKTI):

Department for Business, Innovation & Skills (BIS):
UK Nuclear sector - https://twitter.com/bisgovuk/status/458931569822945280

Department of Energy & Climate Change (DECC):
Nuclear industrial strategy: the UK’s nuclear future -
Nuclear Industry Council - https://www.gov.uk/government/groups/nuclear-industry-council
Map of nuclear power stations in the UK -
Decommissioning and clean-up of nuclear sites -
2050 pathways calculator - http://my2050.decc.gov.uk/

Nuclear Decommissioning Authority (NDA):
Site map - http://www.nda.gov.uk/sites/
Strategy - http://www.nda.gov.uk/strategy/
Harnessing Sellafield’s contribution to the regional and national economy -

Regulators
Office for Nuclear Regulation (ONR):
Sites that we regulate - http://www.onr.org.uk/regulated-sites.htm
Project assessment reports (PARs) - http://www.onr.org.uk/pars/index.htm

Trade Unions
Prospect:
Energy and nuclear -
http://www.prospect.org.uk/select_an_industry/science/publicinterestscience/energy
Nuclear - http://www.prospect.org.uk/select_an_industry/nuclear/?_ts=7555&_ts=7555

Learned societies and professional bodies
Chartered Quality Institute (CQI):
Nuclear special interest group - http://www.thecqi.org/Community/Special-Interest-Groups-SIGs/Nuclear/

Institute of Physics (IOP):

Institute of Mechanical Engineers (IMechE):
What is nuclear power? - http://www.imeche.org/knowledge/themes/energy/nuclear-power
Outlook for nuclear over the next 50 years - http://www.imeche.org/knowledge/themes/energy/nuclear-power/the-future-of-nuclear
When did Britain last build a nuclear power station? - http://www.imeche.org/knowledge/themes/energy/nuclear-power/about-nuclear-power/nuclear-uk

Skills development bodies
National Skills Academy Nuclear (NSAN):
Course finder - https://www.nuclear.nsacademy.co.uk/courses
e-Learning portal - https://www.nuclear.nsacademy.co.uk/e-learning-portal
Frequently asked questions - https://www.nuclear.nsacademy.co.uk/faq
Job portal - https://www.nuclear.nsacademy.co.uk/jobs

Cogent SSC Ltd:
Science career pathways - http://www.sciencecareerpathways.com/home/
Career pathway tool -


Nuclear island - http://www.nuclearisland.co.uk/home/

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Research and development
National Nuclear Laboratory (NNL):

Nuclear Advanced Manufacturing Research Centre (NAMRC):
UK new build plans - http://namrc.co.uk/intelligence/uk-new-build-plans/
UK capabilities - http://namrc.co.uk/intelligence/uk-capabilities/
Decommissioning - http://namrc.co.uk/intelligence/decommissioning/
Resources - http://namrc.co.uk/intelligence/resources/
Ask nuclear - http://namrc.co.uk/work-with-us/ask-nuclear/

University of Manchester Dalton Nuclear Institute:
Nuclear reactor simulator - http://www.dalton.manchester.ac.uk/engage/nrs/
Energy Top Trumps -
http://www.dalton.manchester.ac.uk/media/eps/dalton/documents/Dalton-Top-Trumps.pdf

Research Councils UK:
Fusion – http://www.rcuk.ac.uk/research/xrcprogrammes/energy/EnergyResearch/Fusion/
Nuclear fission -
http://www.rcuk.ac.uk/research/xrcprogrammes/energy/EnergyResearch/Nuclearfission/
## ANNEX 3

**Membership of the Nuclear Industry Council Public Understanding of nuclear Energy workstream**

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Professor Andrew Sherry FREng (Chair)</td>
<td>The University of Manchester</td>
</tr>
<tr>
<td>Niki Comer (Secretary)</td>
<td>Department for Business Innovation and Skills</td>
</tr>
<tr>
<td>Erica Boardman</td>
<td>AMEC</td>
</tr>
<tr>
<td>John Idris Jones</td>
<td>Anglesey Energy Island</td>
</tr>
<tr>
<td>Amanda Lynn</td>
<td>Department for Business Innovation and Skills</td>
</tr>
<tr>
<td>Kerry Seelhoff</td>
<td>Department for Business Innovation and Skills</td>
</tr>
<tr>
<td>Patrick Walsh</td>
<td>Department for Business Innovation and Skills</td>
</tr>
<tr>
<td>Professor Nick Pidgeon MBE</td>
<td>Cardiff University</td>
</tr>
<tr>
<td>Andrew Dobbie</td>
<td>Department for Energy and Climate Change</td>
</tr>
<tr>
<td>Charlotte Williams</td>
<td>Department for Energy and Climate Change</td>
</tr>
<tr>
<td>Clare Bayley</td>
<td>Department for Energy and Climate Change</td>
</tr>
<tr>
<td>Patricia Macready</td>
<td>Department for Energy and Climate Change</td>
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<tr>
<td>Alex Kaufman</td>
<td>EDF Energy</td>
</tr>
<tr>
<td>Nigel Knee</td>
<td>EDF Energy</td>
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<tr>
<td>Richard Mayson</td>
<td>EDF Energy</td>
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<tr>
<td>Alan McGoff</td>
<td>Environment Agency</td>
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<tr>
<td>Leon Flexman (phone)</td>
<td>Horizon</td>
</tr>
<tr>
<td>Ben Russell</td>
<td>Horizon Nuclear Power</td>
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<tr>
<td>Hannah Joll</td>
<td>Horizon Nuclear Power</td>
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<tr>
<td>Professor Gerry Thomas</td>
<td>Imperial College, London</td>
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<tr>
<td>Malcolm Grimston</td>
<td>Imperial College, London</td>
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<tr>
<td>Julian Hamm</td>
<td>Independent</td>
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<tr>
<td>Kirsty Alexander</td>
<td>Independent</td>
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<tr>
<td>John Idris Jones</td>
<td>Magnox</td>
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<tr>
<td>Adrian Bull</td>
<td>National Nuclear Laboratory</td>
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<tr>
<td>Bron Madson</td>
<td>NDA (previously)</td>
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<td>Jon Phillips</td>
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<td>Roy Payne</td>
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<tr>
<td>Keith Parker</td>
<td>Nuclear Industry Association</td>
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<tr>
<td>Sara Crane</td>
<td>Nuclear Industry Association</td>
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<tr>
<td>Elaine Boyes</td>
<td>Nuclear Institute</td>
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<tr>
<td>Norman Harrison</td>
<td>Nuclear Institute</td>
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<tr>
<td>Mary Kinsella</td>
<td>National Skills Academy for Nuclear</td>
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<td>John McNamara</td>
<td>NuGen</td>
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<td>Garry Graham</td>
<td>Prospect Union</td>
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<td>Debbie Huston</td>
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<td>Steve Robinson</td>
<td>Sciencewise</td>
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<tr>
<td>Rory O’Neill</td>
<td>Sellafield Ltd</td>
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<tr>
<td>Kevin Coyne</td>
<td>Unite Union</td>
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<tr>
<td>Martin Freer</td>
<td>University of Birmingham</td>
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<tr>
<td>Neil Fagan</td>
<td>URENCO Ltd.</td>
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<tr>
<td>Ron Loveland</td>
<td>Welsh Government</td>
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</tbody>
</table>

.. Delivering a successful and sustainable nuclear industry...