

The UK's National Nuclear Laboratory

Our Science and Technology Agenda

Unleashing Innovation and
Meeting the UK's Climate
Change Targets

Nuclear Science to Benefit Society

#NewClearFuture

2021-2026

Contents

1

2

3

Context

- 1.1 [Introduction from our CEO and CSTO](#)
- 1.2 [Our Commitment to Science and Technology](#)

A New Agenda for Science and Technology

- 2.1 [Three Key Pillars](#)
 - 2.1.1 [Core Science](#)
Case Study by Nassia Tzelepi
 - 2.1.2 [Innovation](#)
Case Study by Gareth Mannion
 - 2.1.3 [Strategic Research](#)
Case Study by Dr Paul Nevitt
- 2.2 [Collaboration](#)
Case Study by Dr Robin Taylor

Delivering Impact and Value

- 3.1 [Our People and Facilities](#)
- 3.2 [Measuring our Impact](#)

1.1 Introduction from our CEO and CSTO

[Click here](#)



1.1

Introduction from our CEO and CSTO

At NNL, as the UK's national laboratory for nuclear fission, we are home to skills, knowledge and facilities of strategic national importance.

But this role is not simply about maintaining the status quo; it requires ongoing innovation, research and leadership to sustain our scientific expertise.



Dr Paul Howarth
NNL Chief Executive Officer



Dr Fiona Rayment
NNL Chief Science and Technology Officer

Back in 2015, NNL established a Science and Technology Strategy to guide us in improving our technical capabilities, strengthening our reputation and ensuring we create value, both for our customers and the nuclear sector as a whole.

Six years on, the world is not the place it was.



Over 120 countries have pledged to achieve net zero by 2050 and in the UK this commitment is legally binding. The UK government's Department for Business, Energy and Industrial Strategy (BEIS) has set down clear goals to tackle climate change and turn the UK into a science superpower.

The place for nuclear within this is clear, as a key component of BEIS's *Ten Point Plan for a Green Industrial Revolution*. So at NNL, we have been undergoing our own evolution in order to help enable what is required.

As part of our new mission, *nuclear science to benefit society*, we have developed four Focus Areas which all address important global challenges: Clean Energy, Environmental Restoration, Health and Nuclear Medicine and Security and Non-Proliferation. These are areas we are working on now, and on which we will collaborate with the entire nuclear sector – and beyond – to deliver successfully for the UK.

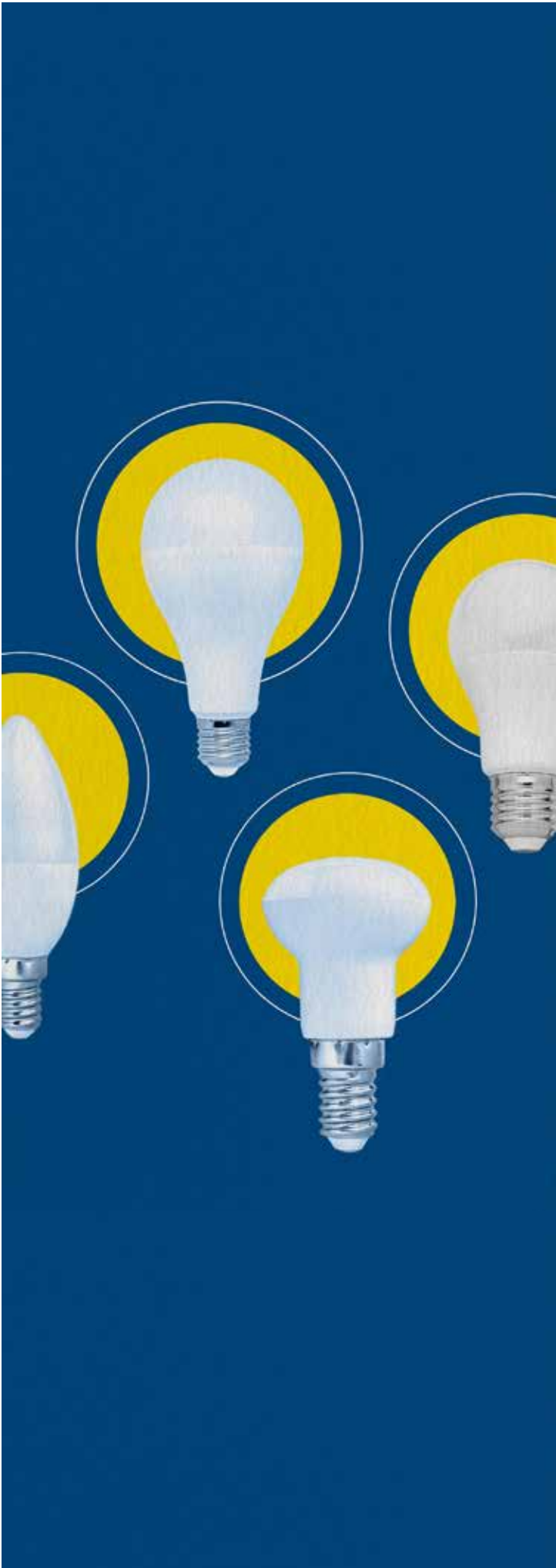
To support our aims in each of these areas, we have created a new Science and Technology Agenda for the next five years. It is made up of three key pillars – Core Science, Innovation and Strategic Research – all of which are underpinned by Collaboration; a balanced portfolio that ensures we are addressing current as well as future needs.

We hope that this Agenda, in combination with our [Strategic Plan](#), illustrates how committed we are to delivering meaningful and sustainable change.

It is through our ongoing commitment to science and technology that we will continue to serve our customers, our partners and our nation, and cement the UK's position as a global thought leader in nuclear technology.

1.2 Our Commitment to Science and Technology

[Click here](#)



1.2

Our Commitment to Science and Technology

Science and technology is, and always has been, the beating heart of NNL.



Keith Stephenson
European Space Agency Lead

“The isotopes for space project has basically enabled the pursuit of a European space radioisotope power capability – no other fully credible routes for the production of suitable isotopes have been identified.”



Patrick Regan
Professor of Nuclear Metrology and
NPL Fellow, National Physical
Laboratory

“The Advanced Fuel Cycle Programme (AFCP) provides the opportunity to bring together expertise from nuclear engineering, civil nuclear sector and academic nuclear physics communities in one focused, efficient joint research programme.”



Sarah Bibby
Decontamination Technical Manager,
Sellafield Ltd

“As part of Sellafield Ltd’s long-term partnership with NNL, we have been pleased to work together on a range of important science and technology developments to support the ongoing Post Operational Clean Out at the Sellafield site. Our collaboration has and will continue to be key to delivering innovation and, ultimately, enabling time and cost savings for the taxpayer.”

Our breadth of work in recent years has included:

- **Helping the European Space Agency to develop a viable alternative to the existing radioisotope power systems used in space travel;**
- **Collaborating with Sellafield Ltd to successfully mitigate radioactive land contamination at their site;**
- **Influencing the operations of national and international reactors through our water radiolysis research.**



As the UK's only technical authority on nuclear fission, we know it is our responsibility to continually look to the future and consider the bigger picture.

Whether through our customer work or for society more broadly, we are seeking solutions to some of today's biggest global challenges.

Without the support of nuclear, for example, it is difficult to see a scenario in which the UK will meet its climate change goals. Our Science and Technology Agenda is therefore designed to ensure our nation has what it needs to underpin new and existing nuclear clean energy technologies, such as advanced reactors and hydrogen production.

At the same time, we are keen to pursue new knowledge and applications that can support advances in healthcare or in environmental restoration efforts.

And, throughout, we will be helping to develop the crucial pipeline of skills and talent that the UK needs now and for the future; from supporting PhD candidates to giving our existing scientists the space they need to make breakthroughs.



It is critical that we continue to advance science and technology and take up opportunities to develop our national capabilities. If we do not do this now, these opportunities will be lost.

As we look ahead to a post-pandemic UK, our work will also play an important part in driving the national economic recovery. Not only will our activities unleash scientific innovation but, because of our ties to the North West, we will be levelling-up our northern communities and rebalancing the economy in the process.

Over the next five years and beyond, our science and technology activity will:

- Enable successful delivery of customer programmes;
- Create global thought leadership;
- Provide intelligent customer capability for government that will shape the future nuclear agenda;
- Create new ideas, approaches and services that enable successful implementation of NNL's strategy;
- Deliver successful partnerships (nationally and internationally) with industry, national laboratories, academia and government for demonstration and selection of nuclear technologies;
- Make our custodianship of nuclear fission talent and critical national infrastructure deliver for the whole of the UK.

2.1 Three Key Pillars

[Click here](#)



2.1

Three Key Pillars

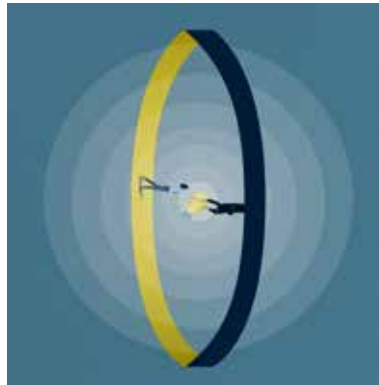
Our new Agenda is designed to address the market and strategic requirements facing the nuclear sector now, and to continue generating new opportunities and offerings for our existing customer base.

We have devised a balanced portfolio that recognises the way our work typically provides a technology *push* to address existing requirements, but also allows for the market to *pull* our work into areas where aspirations lie. It is made up of three key pillars:



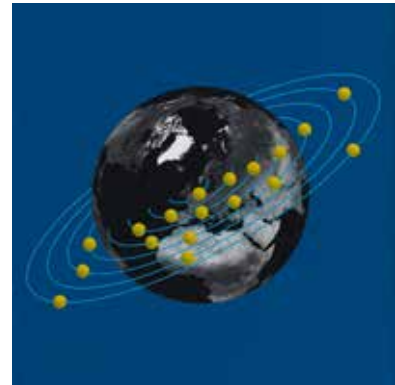
Core Science

Pioneering 12 areas of science, all of which support our Focus Areas, funded by reinvesting the earnings generated across NNL. All will drive collaborations with universities, contribute to our commercial contracts and provide a platform for scientifically challenging work.



Innovation

Developing new ways of doing things that will foster a culture of challenge-solving within NNL, and working with our customers to address their innovation requirements through the application of science and technology. Additionally, we aim to support the supply chain to develop solutions for the future, by partnering with Small and Medium Sized Enterprises (SMEs).



Strategic Research

Using the capabilities we have built up, typically through our Core Science areas, to develop not-for-profit programmes that fulfil a technical challenge of national importance. They represent the next phase of development of the technologies involved.

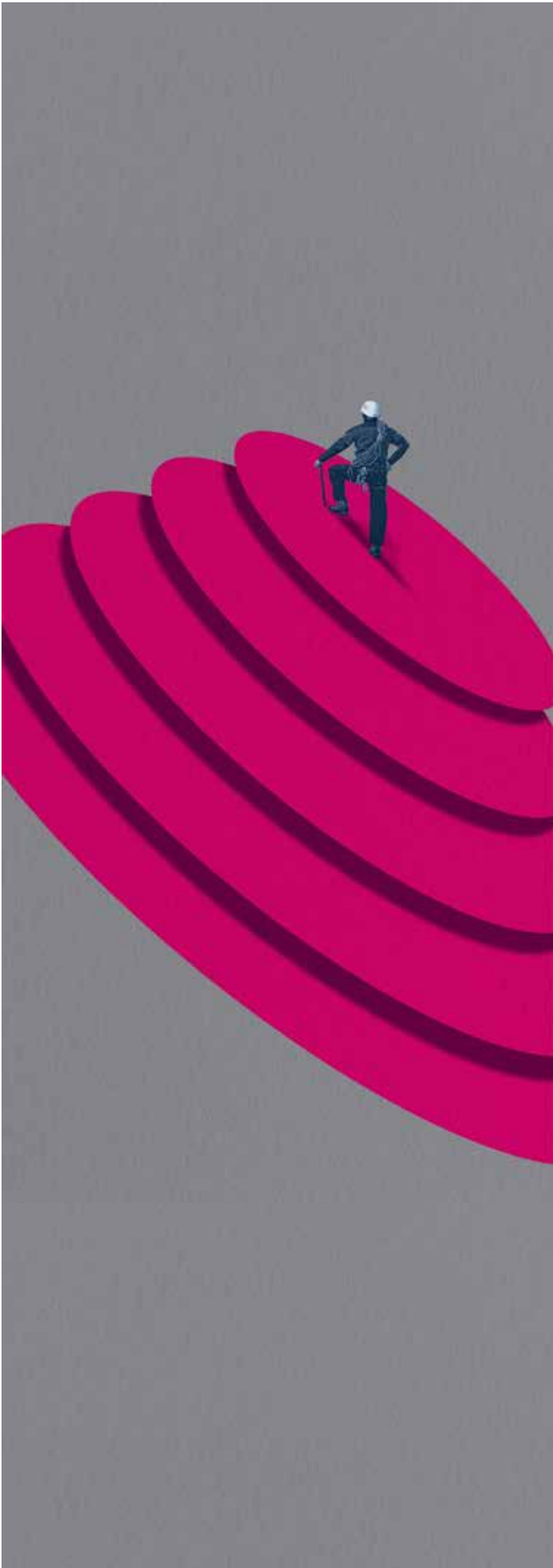


Collaboration

We recognise that we cannot hold these three pillars up alone. The foundation that underpins all our work is Collaboration: working with academia, industry partners and our national and international collaborators to bring together key skills, infrastructure and financial resources, ensuring that we can successfully deliver our Science and Technology Agenda.

2.1.1 Core Science

[Click here](#)



2.1.1

Core Science

Core Science is focused on pushing the boundaries of nuclear science, building NNL's technical reputation and delivering knowledge and capabilities for our stakeholders.

Our 12 Core Science areas

Our Core Science themes provide a platform for innovative and scientifically challenging work for our scientists, of which risk taking – but with a fail-fast approach – is a necessary component.



Advanced Recycling Isotope Separations (ARIS)



Environmental Radiochemistry



Post Irradiation Evaluation (PIE) & Materials Performance



Reactor Chemistry (& Corrosion)



Advanced Fuels



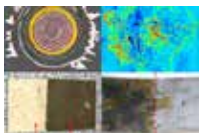
Thermal Treatment



Nuclear Safety



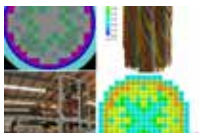
Structural Integrity



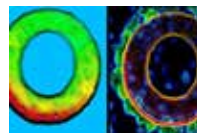
Decontamination Science



Health and Nuclear Medicine



Reactor Technology



Irradiated Fuel Characterisation

In addition to three new areas of science added this year, five of the 12 are heading to 'world class' and four have already been independently peer reviewed as such.

Not only does this work stimulate creativity and fresh thinking amongst our people, but the technologies developed through Core Science contribute directly to our commercial activities. The programmes therefore return extremely good value for money in relation to the level of investment they require.

Our core areas of science are also fundamentally important to our current and future Strategic Research programmes. It is through the technical advances that have been made in Advanced Fuels and ARIS, for example, that we have been able to deliver our pioneering Advanced Fuel Cycle Programme (AFCP) on behalf of BEIS.

Developing our national capabilities through Materials Performance

Nassia Tzelepi has over 15 years' experience in the nuclear industry and is a Fellow in Graphite Technology at NNL.

"Materials Performance is one of our Core Science areas at NNL and is made up of three key parts – Metals and Alloys, Spent Fuel Storage and Graphite Technology. Whilst each of these areas is distinct, they all aim to develop a mechanistic understanding of the behaviours of the different materials being studied and help us deliver on our ambitions in Clean Energy and Environmental Restoration.

I work specifically in Graphite Technology which involves supporting the operation of existing reactors and the development of new ones, as well as assisting graphite decommissioning. For reactors in the UK, graphite acts both as a moderator in the nuclear reaction and forms the structural material of the reactor core itself. The UK has been operating graphite-moderated reactors commercially longer than any other country in the world, so our expertise in the field is unparalleled.



"To ensure our work is always at the cutting edge, we collaborate with experts in academia and with universities across the country, often welcoming PhD students and researchers into our laboratories."

Nassia Tzelepi

Fellow in Graphite Technology at NNL

To ensure our work is always at the cutting edge, we collaborate with experts in academia and with universities across the country, often welcoming PhD students and researchers into our laboratories. This provides those outside NNL with the opportunity to work in an industrial environment, as well as giving our people the chance to tap into a wider pool of knowledge and enhance their own technical abilities.

Likewise, through our participation in ASTM International, which is the organisation that provides the standards and the test methods for measuring graphite samples, we have formed strong partnerships with laboratories across the world. These include Idaho National Laboratory and Oak Ridge National Laboratory in the US, and NRG in the Netherlands.

As we look to the future, our main aim in Graphite Technology is to support the next generation of nuclear reactors and ensure we accelerate the decommissioning of our existing ones in a safe and cost-effective manner. For over 60 years, NNL has been the only provider of post-irradiation examination campaigns of reactor graphite in the UK, which means we are perfectly positioned to apply our extensive experience to new areas of nuclear energy."

The future of Core Science

By 2026, we want all 12 of our Core Science areas to be independently reviewed as, or on the way to being, 'world class'.

To help us achieve this, we will deliver a series of engagement programmes that line up with each of our Core Science areas. This will involve communicating much more broadly – both across NNL and externally – to engage the very best in our sector, and continuing to provide the wider research community with access to our specialist facilities.

2.1.2 Innovation

[Click here](#)



2.1.2

Innovation

Innovation is fundamental to ensuring we build a successful, broad-ranging and balanced portfolio that addresses NNL, industrial and customer needs.

We see innovation as an enabler to overcoming technical and process challenges and a means to identify, translate and apply.

Across NNL, we encourage a challenge-led approach and embed opportunities for out-of-the-box thinking within our everyday structures, whether that is through our top-down challenges or working in Tiger Teams.

We have also developed a bespoke innovation programme to support the delivery of key innovation projects – facilitating everything from idea stimulation and prototyping to commercialisation.

These projects have been predominantly used to drive our Environmental Restoration ambitions thus far, and have led to the development of a 3D laser scanner, a radiometric probe and Electrolytically Advanced Surface Decontamination (EASD) technology.

As a result of these successes, we will be continuing to apply this innovation model across more of our Focus Areas going forward.



Finding new and better solutions within decommissioning



“It is critical that NNL drives this kind of innovation so that we can continue to find new and better ways of doing things, both for our customers and our society.”

Gareth Mannion

Research Technologist at NNL

Gareth Mannion is a Research Technologist at NNL who helps deliver our Electrolytically Assisted Surface Decontamination (EASD) project, in collaboration with C-Tech Innovation Ltd. He joined NNL in August 2020.

“Joining NNL has been a great learning experience and a real step up in terms of gaining technical insight. Over the past few months, I have been working on EASD – an innovation project focused on declassifying waste on nuclear sites, feeding directly into our Environmental Restoration and Security and Non-Proliferation Focus Areas.

EASD technology involves applying an electrolyte to a contaminated metal surface and passing a current through it. This oxidises the metal which dissolves and becomes associated with the electrolyte; in turn, this can be stripped off and safely disposed of. We deliver the project in collaboration with our partner, C-Tech Innovation Ltd. It is the coming together of a chemical problem with an electrical solution, requiring the expertise of both parties.

The art of electropolishing or electropolishing is a well-established industrial technique for removing impurities; however, what is unique to EASD is the way the electricity is applied to the surface. We use a very specific waveform that constantly disrupts the surface, allowing us to drill down deeper and strip off as much material as necessary.

EASD technology is still in the development phase and so our next step will be onsite deployment trials at Sellafield Ltd. Since the technology isn't intrusive, operations at the site can be ongoing whilst it is deployed and articles can be decontaminated in-situ. For example, if there is an active glove box that is in frequent use, the operator can treat the hotspot area, dispose of the contaminated section and ensure the glove box remains fully accessible.

The project is integral to reducing the amount of nuclear waste and any associated radiological hazard. In addition, it saves expense by ensuring that equipment that would otherwise have to be decommissioned can continue to be used. It is critical that NNL drives this kind of innovation so that we can continue to find new and better ways of doing things, both for our customers and our society.”

Alongside innovating within NNL, we take seriously our responsibility to drive growth and innovation across the UK. Key to this is collaboration, which is why we are proud of our extensive partnership work.

Working with Sellafield Ltd and FIS360, we have developed the Game Changers programme which has successfully incentivised over 100 other organisations, ranging from universities to cutting-edge SMEs in the supply chain, to find ways to overcome some of the most complex challenges in the nuclear industry.

One example of this has been with Resolve Robotics, a Cumbrian SME. It has received funding to develop its versatile and modular robotic deployment system CellRail, which will make it safer, easier and cheaper to carry out inspection and intervention processes in nuclear cells.



“Our relationship with Game Changers and ability to work with NNL has had a significant impact on our business, lending us credibility within the UK nuclear sector and the confidence to expand our market reach.

By helping us advance CellRail, our novel remote deployment technology, we hope to remove barriers to decommissioning activities and minimise the overall cost and environmental impact. Since being involved in Game Changers, we have been able to increase our workforce from one to nine and provide highly specialist jobs here in the North West.”

Andrew Ludar-Smith

Technical Director of Resolve Robotics

How we are embedding innovation further

As part of our new Science and Technology Agenda, we will provide more opportunities for our people to innovate by:

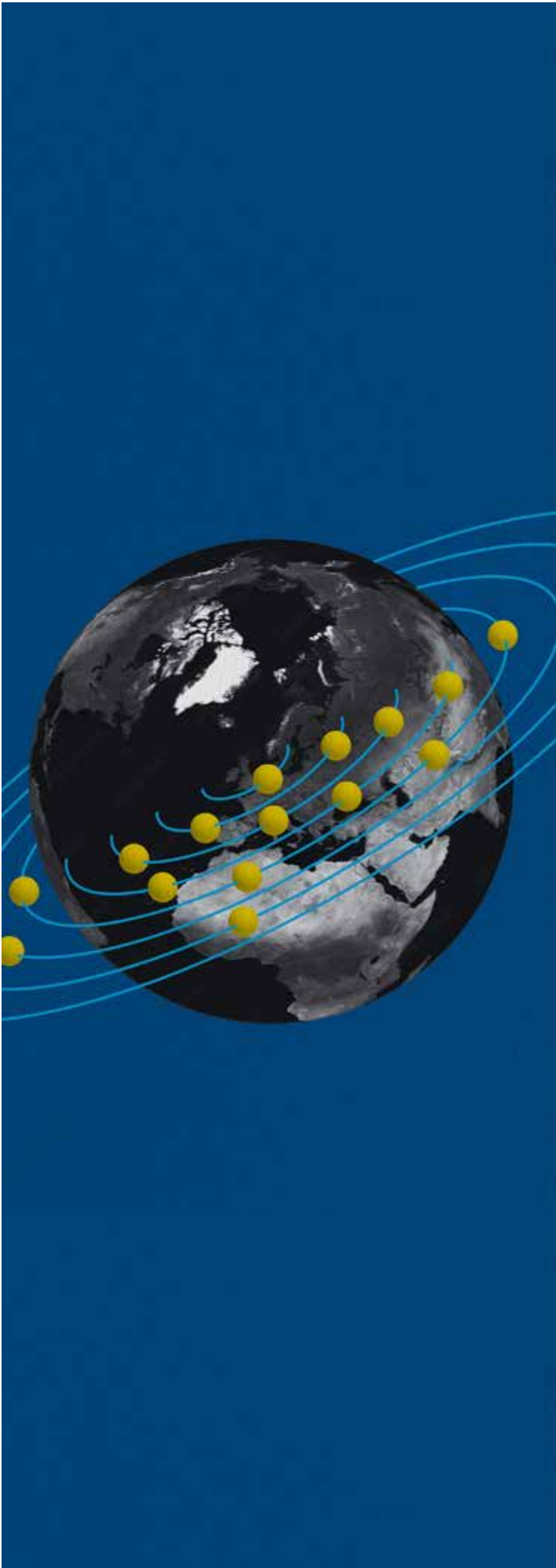
- Increasing internal conversations that inspire innovation by developing use of our customised digital platform, Innovation Lab;
- Establishing a dedicated ‘thinking’ space – The Think Tank – and a dedicated ‘doing’ space – The Forge – at our Workington Laboratory in Cumbria;
- Embedding a focus on innovation within our people’s Objectives and Key Results (OKRs) and Performance and Development Reviews (PDRs).

We will also expand the focus of our innovation projects beyond Environmental Restoration so that they support our remaining three Focus Areas: Clean Energy, Security and Non-Proliferation and Health and Nuclear Medicine. This will include harnessing digital innovation and robotics to support advancements.



2.1.3 Strategic Research

[Click here](#)



2.1.3

Strategic Research

Strategic Research encompasses the non-for-profit programmes we run for government and other key stakeholders, all of which fulfil a technical challenge of national importance.

The funding model is based on a fully-costed direct investment, with the programmes typically requiring a considerably larger investment than our Core Science initiatives.

In collaboration with our partner organisations, we currently help deliver two world-leading Strategic Research programmes.



Advanced Fuel Cycle Programme (AFCP)

Evolving advanced fuels and recycling concepts to elevate the UK's clean energy innovation.

AFCP is a multi-disciplinary programme that is supporting the nation's transition to net zero by 2050 and, in the process, providing a platform for UK manufacturing and engineering businesses to expand and innovate.



Alpha Resilience Capability (ARC)

Sustaining and enhancing the UK's world-leading alpha skills capabilities.

Led by the Nuclear Decommissioning Authority (NDA), the programme is a collaboration of industry partners focused on ensuring the UK maintains alpha resilience in capability and skills for decommissioning, long term material storage, and disposition in addition to future clean energy advancement. Our experts lend essential support to ARC by driving Plutonium research and development, and leading on the Technical Workstream.

NNL's Advanced Fuel Cycle Programme (AFCP)



“Not only has the programme enabled the UK to re-engage in future fuel technology development but it has also helped galvanise the sector behind the potential of advanced nuclear technologies.”

Dr Paul Nevitt
Technical Director of AFCP

Dr Paul Nevitt is the Technical Director of AFCP, which forms part of the £505 million BEIS Energy Innovation Programme.

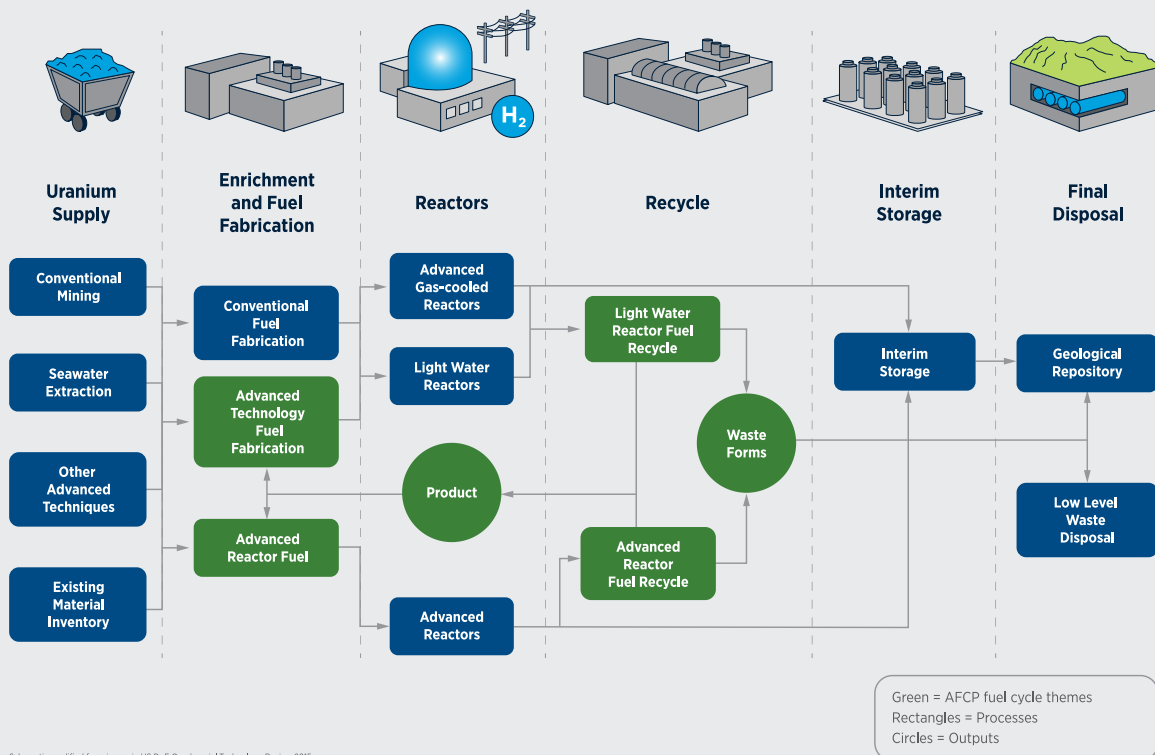
“Our understanding of the nuclear fuel cycle is fundamental to nuclear’s ability to realise a net zero future. Since 2019, NNL has been leading AFCP in partnership with BEIS to deliver world-leading fuel cycle science and technology that is helping to secure affordable clean energy options for the UK.

Not only has the programme enabled the UK to re-engage in future fuel technology development but it has also helped galvanise the sector behind the potential of advanced nuclear technologies. Over the past years, we have worked in partnership with over 100 organisations worldwide, collaborating with leading industrial, academic and research institutions, to develop capabilities across AFCP’s 11 key themes – covering advanced nuclear fuels to advanced recycle and sustainability.

Likewise, within NNL, implementing a large-scale programme such as this requires extensive collaboration between many of our teams and experts. AFCP is intrinsically linked to our ultimate purpose and specifically to our Clean Energy ambitions. Innovations that are therefore made in our Core Science areas often feed directly into AFCP’s work, helping us to continue pushing the boundaries and maximising the programme’s potential.

Now as we look to the future, we want to elevate the technologies that have been developed so far, so that we can continue to secure a sustainable future. To this end, we have recently published a series of research, development and demonstration (RD&D) technology roadmaps, focused particularly on fuel manufacture and used fuel management.

Designed to aid the thinking of policy makers and stakeholders across the nuclear sector, the roadmaps set out a pathway that would, proactively and critically, allow the UK to build on its existing fuel cycle capabilities and help realise our national ambitions to become a scientific superpower.”



Schematic modified from image in US DoE Quadrennial Technology Review 2015

What's next for Strategic Research

We have always been involved in Strategic Research at NNL but breaking it out as a distinct body of work – as we have done in this Agenda – is entirely new.

Over the next five years, we will build up our existing Strategic Research programmes and continue to provide the necessary training and development for nuclear scientists and engineers across the sector to ensure they run successfully.

Working with key stakeholders and organisations across the sector we will deliver additional Strategic Research programmes. In doing so, we will look to stimulate supply chains, grow partnerships with other national laboratories, industry, academia and government, and create value for money wherever we can.

We will also continue to explore further opportunities for us to support next-generation clean energy technologies, such as advanced reactors, materials and hydrogen production routes.

2.2 Collaboration

[Click here](#)



2.2

Collaboration

Translating the potential of nuclear science into viable technologies and transferable knowledge requires strategic partnerships across both the public and private sectors.

We are committed to helping cultivate the right conditions for successful new development and promoting collaboration across academia, research bodies, government and industry, both nationally and internationally.

We want to ensure the UK has the capabilities it needs – whether in physical infrastructure, or in the skills and knowledge of our people – to underpin innovation and secure the technologies of the future.



Collaboration in Numbers

We are currently involved in

12
EU programmes

with a combined value of

€75 million

and recently won

all six
of our bids for **Horizon 2020** funding

In 2020, we supported around

100
PhD students

and

25
postdoctoral research assistants
(PDRAs)

at

20
universities

Each year, we engage with

30+
international events

and collaborate with a range of **international partners** including the

IAEA & NEA

as well as other national laboratories in **Canada, France, Japan and the USA**

In 2020, we supervised

25 researchers

on behalf of the **Nuclear Decommissioning Authority (NDA)**

involving a team of

60+
industrial experts

Maintaining our specialist expertise for broader benefit



“When it comes to science and technology it can take what feels like a long time for value to be realised. But in order to make sure essential developments do come to fruition, it is vital to keep pushing and innovating the Core Science now.”

Dr Robin Taylor
Senior Fellow at NNL

Dr Robin Taylor is a Senior Fellow at NNL and internationally known for his contributions to Actinide Chemistry.

“Separation chemistry underpins a broad range of activities, from fuel recycle to isotope recovery to treatment of waste. Advanced Recycle Isotope Separation (ARIS) was therefore chosen as a Core Science theme as it is an area in which NNL has historically been very strong and in which there are significant emerging opportunities. It will be supporting elements of each of our four Focus Areas in some way.

Over the years, ARIS has been a key component of retaining and developing the skills, facilities and knowledge base we are proud to offer here at NNL, enabling us to contribute to highly valuable national and international projects. For us as scientists, being involved in state-of-the-art research that is both interesting and relevant goes a long way.

If it hadn't been for the investment in ARIS over the last decade, it is unlikely we would have had the expertise and the facilities we needed to deliver the Advanced Fuel Cycle Programme (AFCP) for government; we wouldn't have been able to collaborate with the European Space Agency on a new power source for space travel; and we wouldn't be involved in a lot of the essential Plutonium storage work we are doing with Sellafield Ltd.

One of the things we try to do across our Core Science areas is to look ahead – how do we build our reputation and capabilities now to address future needs, both in the UK and globally? We are currently doing this in ARIS by branching out into other isotopes to see how other materials can be recovered and for what purpose. Exciting and potentially ground-breaking opportunities lie in how they could be used for medical application, which feeds into our Health and Nuclear Medicine Focus Area. ARIS is now enabling us to not only look for these opportunities but also to develop the next generation of experts who will be needed to make them happen.

When it comes to science and technology it can take what feels like a long time for value to be realised. But in order to make sure essential developments do come to fruition, it is vital to keep pushing and innovating the Core Science now. That's why we are committed to investing in these areas – so that we can keep our people sharp and our facilities world class.”

What collaboration will look like from 2021

In 2020, we set up our very first Virtual Collaboration Centre in partnership with the IAEA, to help advance our sector's work on Advanced Fuel Cycles. Over the coming years, we will continue to grow the programme by creating more of these collaborative centres.

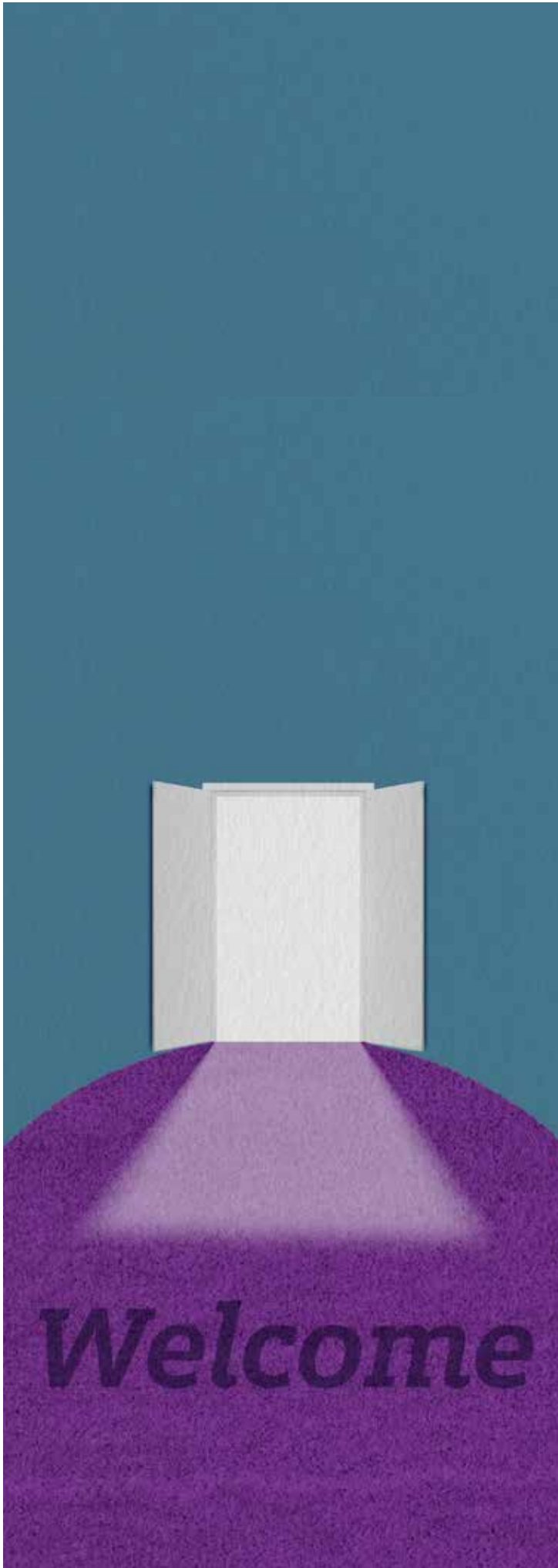
We are currently in the process of exploring partnership opportunities with other like-minded organisations that share our vision for:

- **Advanced Reactors** (Clean Energy), building on the new generation plus SMR/AMR technology
- **Waste Commissioning** (Environmental Restoration)
- **UK Nuclear Forensics** (Security and Non-Proliferation)
- **Medical Radioisotopes** (Health and Nuclear Medicine)



3.1 Our People and Facilities

[Click here](#)



3.1

Our People and Facilities

Implementing a successful science and technology programme must go hand-in-hand with the investments we make in our people.

By attracting, supporting and retaining diverse talent, we can maintain the skills and capabilities needed to deliver our commercial contracts and develop the next wave of innovators.

Through our newly redesigned Early Careers Programme, we are pledging to recruit at least 50 people each year, opening our doors to more apprentices, undergraduates, graduates and post doctorates. This will give our nation's brightest young minds an avenue where they can develop their scientific curiosity and make a positive difference to society.

We greatly value the continued personal and professional development of our people and invest appropriately in their skills and training. We offer Career Pathways for Science, Engineering and People Management and have recently created a new Careers Hub where our people can access a variety of personal development opportunities.

For our senior leaders, we encourage Charterships and Professional Registrations, and deliver our very own Fellowship programme. To ensure it reflects the intellectual diversity we are proud to foster here at NNL, our Fellows represent an array of specialisms and backgrounds – from science and engineering to public engagement.

As well as developing our people within NNL, we provide talented individuals from other organisations and sectors with access to our specialist facilities. Since 2015, we have granted user access to around 12 different organisations each year, predominantly at our Workington and Central Laboratories. We also welcome around 50 independent researchers each year.

We are grateful to the government who have funded the National Nuclear User Facility (NNUF) project in order to help us meet the demand for our facilities. As we look ahead, our aim is to operate our infrastructure as a user centre so it can be accessed by academia, other national labs and the entirety of the supply chain.



By attracting, supporting and retaining diverse talent, we can maintain the skills and capabilities needed to deliver our commercial contracts and develop the next wave of innovators.

Establishing the Centre for Innovative Nuclear Decommissioning (CINDe)

In 2017, we set up our very own PhD Hub, the Centre for Innovative Nuclear Decommissioning (CINDe), in collaboration with Sellafield Ltd, the University of Manchester, Lancaster University, the University of Liverpool and the University of Cumbria.

Based at our Workington Laboratory in Cumbria, CINDe provides an opportunity for PhD researchers to work closely with our expert staff at NNL in supporting decommissioning operations in the nuclear industry, with a particular emphasis on the Sellafield Challenges. As of 2020, we have 17 multidisciplinary PhD researchers working from CINDe.



3.2 Measuring our Impact

[Click here](#)



3.2

Measuring our Impact

Through our science and technology work, we have been able to build our technical reputation, foster new talent, create technical solutions, leverage successful partnerships and add value across the nuclear sector.

But it's not enough just to say we have done these things; we always want to quantify the impact we are having.

We have therefore developed four key metrics by which we will measure the impact of our activities moving forwards.



These are:

Quality

How many journals and books have we contributed to? How many peer reviews have we completed? How many news items have been published internally and externally about our Science and Technology Agenda?

Talent

How many Charterships and Fellowships do we have? How many apprentices, graduates and PhD researchers are we developing?

Value

How much value has been created by investment in science and technology? How many external researchers are accessing grant-funded equipment in NNL?

Partnerships

How many Virtual Collaboration Centres and Strategic Research programmes have been created? How many Tiger Teams do we have? How many innovation projects are we rolling out in collaboration with external organisations?

Our Impact So Far

Over the past five years, we have nearly

doubled
our number of
quality journal publications

and with **AFCP**, we have

tripled
commercial gearing

Since 2015, researchers from

35
different organisations
have accessed our facilities, with

30+
different nationalities represented

4

of our Core Science areas have been independently peer reviewed as **'world class'**

35
new Charterships

and

5

new Fellowships
have been awarded in the past three years

taking us to

230+

Chartered Scientists and **Fellows** in total

Back to contents

[Click here](#)