
Preparatory Committee for the 2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons

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National Report Pursuant to Actions 5, 20, and 21 of the Nuclear Non-Proliferation Treaty (NPT) 2010 Review Conference Final Document

Report submitted by the United Kingdom of Great Britain and Northern Ireland

Introduction

This is a draft document which we share with a wide audience to gather feedback on what we are doing well and what we could do differently. We will then produce a final version of the report for the Review Conference next year.

The report outlines our commitment to achieving our long-term goal of a world without nuclear weapons by highlighting our efforts on disarmament, verification and safeguards. We firmly believe the best way to achieve this is through gradual nuclear disarmament, negotiated using a step-by-step approach within existing international frameworks, taking into account current and future security risks. The NPT has been so successful because it addresses the concerns of the Non-Nuclear Weapon States whilst also taking into account the security climate that provides the context for the Nuclear Weapons States' possession of nuclear weapons.

We have already achieved substantial reductions in our nuclear weapon stockpile. We believe developing effective measures for verifying nuclear disarmament will be vital for enabling the fulfilment of the goals of Article VI of the NPT. The UK believes that a Comprehensive Safeguards Agreement plus an Additional Protocol is the universal verification standard and we support the International Atomic Energy Agency's (IAEA) continued efforts to strengthen the international safeguards system across the world.

The UK has long been an advocate for, and will continue to promote, peaceful uses of nuclear energy. We support the IAEA's international conference on Climate Change and the Role of Nuclear Power in October 2019 and the Technical Cooperation Programme. The Technical Cooperation Programme provides the necessary support to allow countries to use nuclear technologies in a safe, secure and effective way. This report highlights our many financial and practical contributions to the civil nuclear industry, which will be one of our areas of focus leading up to the NPT Review Conference next year.



As we look forward to 2020 and celebrating the 50th anniversary of the Treaty entering into force, we want to underline the significant success of the NPT, which remains the cornerstone of international security and needs to be upheld to provide a safer security environment for all.

Framework for reporting

As provided in the 2010 NPT Review Conference Action Plan, the UK government is working to implement Action 5 to “further enhance transparency and increase mutual confidence” and to make a national report on our Action 5 and other undertakings to the 2019 NPT Preparatory Committee, consistent with Actions 20 and 21. Action 21 states “As a confidence-building measure, all the Nuclear Weapon States are encouraged to agree as soon as possible on a standard reporting form and to determine appropriate reporting intervals for the purpose of voluntarily providing standard information without prejudice to national security.” The framework we use for our national reports includes common categories of topics under which relevant information is reported, and it addresses all three pillars of the NPT: disarmament, non-proliferation, and peaceful uses of nuclear energy. We encourage all state parties, consistent with Action 20, to make similar reports.

Section I: Reporting on national measures relating to disarmament

i. National security policies, doctrine, and activities associated with nuclear weapons

Explanation of the UK’s nuclear doctrine

The UK’s strategic nuclear deterrent is a political, not a warfighting, tool. Only the Prime Minister can authorise the launch of nuclear weapons, ensuring strict civilian and political control. Nuclear deterrence policy is owned by the Cabinet Office and implemented by the Ministry of Defence.

In 2010, the UK government committed to undertaking a defence and security review every five years to ensure our policy remained fit for purpose. The 2015 Strategic Defence and Security Review (SDSR),¹ building upon the 2006 white paper “The Future of the UK’s Nuclear Deterrent”,² sets out our public policy on nuclear deterrence, our capability and force structure.

Why we have a nuclear deterrent

The UK independent nuclear deterrent will remain essential to our security today, and for as long as the global security situation demands. Other states continue to maintain significant nuclear arsenals and there is a continuing risk of further proliferation of nuclear weapons. Recent changes in the international security environment remind us that there remains a risk that states might use their nuclear capability to threaten the UK, or our vital interests. The existence of states who engage in provocative nuclear rhetoric; rely on doctrine that promotes the use of nuclear weapons; and develop new delivery capabilities designed to undermine strategic stability are a constant reminder that our independent nuclear deterrent remains essential to deter the most extreme threats to our national security and that of our Allies.

¹ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/555607/2015_Strategic_Defence_and_Security_Review.pdf.

² <http://www.gov.uk/government/publications/the-future-of-the-united-kingdoms-nuclear-deterrent-defence-white-paper-2006-cm-6994>.

The UK keeps its nuclear posture under constant review in the light of the international security environment and the actions of potential adversaries.

'Minimum Credible' deterrence

We are committed to maintaining only the minimum destructive power needed to deter any aggressor. This requires us to ensure that our deterrent is not vulnerable to pre-emptive action by potential adversaries. Our assessment, after considering the alternatives, remains that four submarines are needed to give assurance that at least one will always be at sea, undetected, as a 'Continuous At Sea Deterrent'. This provides a second-strike capability to deter a state from contemplating use of their nuclear capability to threaten us, try to constrain our decision-making in a crisis or sponsor nuclear terrorism.

Under Operation Relentless, continuous-at-sea patrols are conducted by Vanguard class submarines carrying no more than 40 nuclear warheads and no more than eight operational Trident ballistic missiles. This is the lowest number of warheads since the introduction of our nuclear powered ballistic missile submarine (SSBN) capability in the 1960s.

In 2016, a debate was held in the House of Commons on the principle of Continuous-at-Sea Deterrence. Members of Parliament voted decisively to replace the four submarines necessary to maintain the current posture, with 472 votes for the motion and 117 against. This is not an upgrade of our capabilities, nor does it change the salience of nuclear weapons in our security doctrine. The Dreadnought-class of submarines are due to enter service from the early 2030s.

We are the only Nuclear Weapon State to have reduced our deterrent capability to a single system and our minimum credible nuclear deterrent is a responsible answer to the current and foreseeable international security threat.

Operational policy

The UK has long been clear that we would only consider using our nuclear weapons in extreme circumstances of self-defence, including the defence of our North Atlantic Treaty Organisation (NATO) Allies. In order not to simplify the calculations of any potential aggressor, we remain deliberately ambiguous about precisely when, how, and at what scale we would contemplate their use.

As set out in the 2015 SDSR, the UK has reaffirmed that it will not use or threaten to use nuclear weapons against any Non-Nuclear Weapon State party to the NPT. In giving this assurance, we emphasise the need for universal adherence to the NPT and that this assurance would not apply to any state in material breach of those non-proliferation obligations. While there is currently no direct threat to the UK or its vital interests from states developing weapons of mass destruction, for example chemical or biological capabilities, we reserve the right to review this assurance if the future threat, development and proliferation of these weapons make it necessary.

The UK's nuclear weapons are not on high alert (the patrol submarine operates routinely at several days' "notice to fire") and, since 1994, the missiles have not been targeted at any state. We believe that a nuclear attack on the UK's vital interests is deterred by demonstrating our capability to respond under any circumstances, rather than by an ability for a rapid response.

We give the very highest priority to the security and safety of our nuclear weapons, consistent with our obligations under non-proliferation agreements. There are a number of technological and procedural safeguards built into the UK's nuclear deterrent to prevent an unauthorised launch of its Trident missiles.

ii. Nuclear weapons, nuclear arms control (including nuclear disarmament) and verification*Nuclear disarmament*

The UK is committed to the long-term goal of a world without nuclear weapons. We firmly believe the best way to achieve a world without nuclear weapons is through gradual nuclear disarmament, negotiated using a step-by-step approach, within existing international frameworks. Globally, disarmament is happening. Overall, the number of nuclear weapons in the world has reduced by nearly three-quarters since its peak in the mid-1980s.

Productive results can only be achieved through a consensus-based approach that takes into account the wider global security context. It is only through building the necessary mutual trust between states, and through putting into place the key international architecture to help build the conditions for further disarmament, that we can make progress on a realistic and effective route towards a shared goal of a world without nuclear weapons.

The UK, as a responsible Nuclear Weapon State, has been pursuing a step-by-step approach to nuclear disarmament consistent with the NPT and our other treaty commitments. We remain strongly committed to the NPT, will work for a successful outcome at the 2020 Review Conference and continue to press for full universalisation of the treaty. We also continue to campaign for the entry into force of the Comprehensive Test Ban Treaty (CTBT), and the start and early conclusion of negotiations in the Conference on Disarmament on a Fissile Material Cut-Off Treaty (FMCT).

UK stockpile

We have achieved substantial reductions in our nuclear weapon stockpile. In the late 1970s, when our stockpile was at its highest, we had over 400 warheads in-service across five types. Since this peak, we have unilaterally cut our stockpile of nuclear warheads by over half, as outlined in the 2015 SDSR. Today we have fewer than 225 warheads, all of a single type. We have committed to reducing our stockpile to no more than 180 by the mid-2020s, and have achieved our target of reducing the number of operationally available warheads to no more than 120. Since 2010, we have reduced the number of warheads on each submarine on patrol from 48 to 40 and reduced the number of operational missiles on each submarine from 12 to no more than eight.

Verification

Developing and agreeing effective measures for verifying nuclear disarmament will be vital for enabling the fulfilment of the goals of Article VI of the NPT. Nuclear Weapon States and Non-Nuclear Weapon States alike will need to have confidence that nuclear-armed states have dismantled all their warheads, and that this is done in a way that makes us safer and does not inadvertently increase the risk of nuclear proliferation. Beyond the dismantlement of individual warheads, we also need to understand what monitoring and verification procedures may be required across a state's nuclear and defence sites to provide sufficient confidence that nuclear disarmament has taken place irreversibly. Throughout the development of these verification measures, the UK places great importance on involving Non-Nuclear Weapon States and maximising transparency, while upholding our non-proliferation, safety and security commitments.

Since our previous report to the 2015 NPT Review Conference, the UK has continued to play a leading role internationally in the development of nuclear

disarmament verification. The UK-Norway Initiative, which began in 2007, was the first ever technical partnership between a Nuclear Weapon State and a Non-Nuclear Weapon State in this field. In 2015, building on UK-Norway Initiative's work, the UK established the Quad Nuclear Verification Partnership with Norway, Sweden and the United States. In 2017, the Quad undertook the first-ever multilateral disarmament verification exercise at RAF Honington in the UK. Known as LETTERPRESS, the exercise was held at RAF Honington's former nuclear weapons storage facilities, adding additional realism to the verification activities. LETTERPRESS provided the opportunity to practise techniques and procedures in a simulated real-world scenario and explored challenges associated with monitoring and verification of declarations, as might be required in future treaties. The exercise was held in strict conformity with the non-proliferation obligations of all participants. The Quad have produced a report for the 2019 NPT Preparatory Committee summarising our work to date including lessons learned from LETTERPRESS and we look forward to continuing to engage with the international community to share the results of our partnership.

The UK has also entered into a bilateral partnership with Sweden as of 2016 to research specific aspects of nuclear arms control verification including explosives identification and requirements of verification facilities.

The UK has played an active role in the International Partnership for Nuclear Disarmament Verification (IPNDV) since its foundation in 2015. The IPNDV is an initiative that brings together a wide range of countries to identify and solve the challenges associated with nuclear disarmament verification. Over the last four years, the UK has contributed by chairing its working groups on Verification Objectives and Verifying Nuclear Weapon Declarations, as well as participating in all other working groups.

In December 2016, the UK co-sponsored the founding of the United Nations Group of Government Experts on Nuclear Disarmament Verification. The UK has since played an active role in its discussions on the role of verification in advancing disarmament and we look forward to the release of the Group's report in the near future.

The examples of international cooperation outlined above have all demonstrated how Non-Nuclear Weapon States can play an important role in nuclear disarmament verification while upholding the non-proliferation obligations of all states. As our collaborations on verification have developed, a common theme has been the extent to which Non-Nuclear Weapon States have been able to play a near-complete role in the process by viewing the challenge in terms of the verification of nuclear material and explosives.

The UK is also in the second decade of an active bilateral partnership with the United States in monitoring and verification research. Our joint technical cooperation programme allows us to apply policy, technology and programme expertise to develop and evaluate targeted approaches for transparent reductions and monitoring of nuclear warheads, fissile material and associated facilities for potential disarmament and non-proliferation initiatives. Technical experts conduct activities and share information to explore and address essential and difficult monitoring and verification challenges, working to integrate potential approaches for arms control monitoring and transparency.

The UK believes sharing the results of verification initiatives such as the Quad and IPNDV are important for demonstrating transparency, as well as building understanding and capacity for nuclear disarmament verification worldwide. We have participated in NPT Preparatory Committee side events organised by these initiatives to inform the wider international community of our progress. We also hosted a visit to RAF Honington in December 2018 to show IPNDV participants the representative

storage facilities used during exercise LETTERPRESS and allow the Quad to share lessons learned from the exercise.

iii. Transparency and confidence-building measures

Through the SDSR and other documents, the UK has voluntarily declared its maximum warhead stockpile numbers and operational warhead numbers as noted above.

P5 Process

The five Nuclear Weapon States recognised by the NPT have a special responsibility for the continued strength of the Treaty. Their dialogue on NPT issues, known as the P5 process, demonstrates the commitment of the Nuclear Weapon States to work together to build trust and confidence on these issues, which we believe will ultimately take us further towards our shared goal of a world without nuclear weapons.

The UK founded the P5 process in 2009, and has played an active role in it ever since. Under this process the Nuclear Weapon States meet at both senior official and working levels in order to advance our collective dialogue on strategic stability and making progress on disarmament. The UK will host the next P5 Conference in London before the 2020 NPT Review Conference.

The P5 have produced a number of joint statements on NPT related issues, such as statements made during the United Nations General Assembly's First Committee, reaffirming their commitment to the NPT and our support and readiness for negotiations on an FMCT. The UK, United States and Russian Foreign Ministers issued a joint statement in June 2018 reaffirming their commitment, as the three depositary states, to the NPT on the fiftieth anniversary of the Treaty's Opening for Signature, and our determination to work together for a successful 2020 Review Conference.

International Agreements

As mentioned in the UK's 2015 NPT Report, the UK has signed a number of bilateral agreements as confidence building measures with P5 partners. This includes the agreement between the UK and the USSR in 1977 to prevent accidental nuclear war, building upon an agreement in 1967 to establish a direct communication link between the UK Prime Minister and the Kremlin.

More recently, the UK signed the Teutates Treaty with France in 2010. As part of the treaty, both the UK and France agreed to build and jointly operate radiographic and hydrodynamic testing facilities, reaffirming their rights and obligations under the Non-Proliferation of Nuclear Weapons Treaty, and their commitments under the Comprehensive Nuclear-Test-Ban Treaty. It was agreed that through the Treaty, the UK and France would cooperate and share information on safety and security of nuclear weapons, stockpile certification, and counter nuclear or radiological terrorism.

Engagement with civil society

We regularly engage with Non-Governmental Organisations (NGOs) and other entities and states in order to explore areas of potential progress that support the confidence-building required to improve international security and create the conditions conducive for eventual disarmament. UK government officials frequently engage in conferences, workshops and meetings to raise public awareness and

understanding of government policy and we actively promote opportunities for dialogue where we judge it to be constructive and believe progress can be made.

Under the UK Counter Proliferation Programme Fund, we support the work of a number of NGOs working to improve the global non-proliferation architecture. Since 2015, we have funded programmes to develop a better understanding of nuclear safeguards in Africa and the Far East that will allow more countries to sign a Comprehensive Safeguards Agreement and Additional Protocol with the IAEA. Last year we also funded a project that assists better controls on uranium mining activities, ensuring that essential safeguards are introduced at the source. This Fund also provided us with the resources to host a meeting of the IPNDV Plenary in London in 2018, as well as fund wider work on disarmament-related issues by a range of think tanks and NGOs. The continued success of these projects is a clear indication of how the UK has worked effectively with the NGO community to assist disarmament and non-proliferation efforts within the international community.

The Programme Fund also includes our part-sponsorship of events at Wilton Park, a non-profit-making, Executive Agency of the Foreign and Commonwealth Office. Our annual Nuclear Non-Proliferation workshop at Wilton Park provides a highly participative framework with experts contributing on an equal footing in a neutral environment. We have also hosted two Wilton Park events on verification over the last year. The first was to set the format for the Group of Government Experts, and in January this year our second event was to discuss the Group of Government Experts' Report and a proposed way forward. All of these events promote frank, focused and forward-looking discussion between governments and civil society.

iv. Other related issues

Conference on Disarmament

The UK is an active participant at the United Nations Conference on Disarmament. The Permanent Representative of the UK to the Conference on Disarmament is the UK's foremost diplomatic representative to the Conference on Disarmament in Geneva and holds the rank of Ambassador.

In 2016, the UK submitted a draft proposal for a Programme of Work and an associated working group. This included provision for FMCT issues to be included and had near universal support, but was blocked. The UK supported the creation of the five Subsidiary Bodies in 2018, four of which adopted reports by consensus. During our 2019 Presidency, the UK tabled a draft Decision that would have taken forward this work and helped move the Conference on Disarmament closer to developing negotiating mandates on its four core agenda items. The Decision had strong support from across the membership but was blocked by a small number of States. We will continue our efforts to get the Conference on Disarmament back to work.

Fissile Material Cut-off Treaty (FMCT)

The UK has had a moratorium on the production of fissile material for nuclear weapons or other nuclear explosive devices since 1995. In 1998, the UK was the first Nuclear Weapon State to declare the total size of its fissile material stocks and voluntarily place all fissile material no longer required for defence purposes under international safeguards where, to this day, it continues to be liable to inspection by the IAEA. Since then, all enrichment and reprocessing in the UK has been conducted under international safeguards.

We made a commitment in the 2010 Action Plan to begin negotiation within the Conference on Disarmament of a treaty banning the production of fissile material for

use in nuclear weapons or other nuclear explosive devices. The UK continues to press for negotiations on such a Treaty in the Conference on Disarmament.

The UK took an active role in two series of consensus-based expert meetings, chaired by Canada, to deepen the dialogue on an FMCT. These were the FMCT Group of Government Experts in 2014–15 and the High Level Expert Preparatory Group in 2017–18. These meetings identified the issues upon which future negotiators will need to focus and the considerations that they will need to take into account. The High Level Expert Preparatory Group explored the institutional aspects of a future treaty in detail for the first time.

We continue to support the immediate commencement of negotiations on an FMCT and to work actively with other States, including the P5, to explore ways of moving forward. We have expressed this position in statements at the United Nations Security Council, Conference on Disarmament, NPT Preparatory Committees and United Nations First Committee.

Comprehensive Nuclear-Test-Ban Treaty (CTBT)

The UK has maintained a voluntary moratorium on nuclear weapon test explosions and any other nuclear explosions since 1991. We played a central role in the negotiation of the CTBT and we were one of the first to sign it on the day it opened for signature in 1996. The UK completed ratification on 6 April 1998.

The UK government views the entry into force of the CTBT as part of the step-by-step approach to non-proliferation and nuclear disarmament, and we continue to be a vocal campaigner for its entry into force, including by regularly lobbying Annex II states to sign and ratify. The Minister for Asia-Pacific reiterated the UK's support of the CTBT at the January 2018 United Nations Security Council High Level Thematic Briefing on Non-Proliferation of Weapons of Mass Destruction. We welcome the ratifications of the Treaty by Eswatini and Myanmar in 2016, Thailand in 2018 and Zimbabwe in 2019 as well as Tuvalu's signing of the Treaty in 2018.

Since the UK's last report submitted at the Review Conference in 2015, we have consistently highlighted the importance of the CTBT, including through our statements at the United Nations General Assembly's First Committee and the UK's support for the Article XIV process and the biennial Friends of CTBT statement. The UK is one of the largest financial contributors to the CTBT Organisation (CTBTO), after the United States, and contributes £4.5 million annually. This includes the CTBTO's pilot project to fund experts from developing countries to attend technical meetings of the CTBTO.

We also provide extensive technical, practical and political support to the CTBTO's Preparatory Commission. In 2018, we hosted the CTBTO's On-Site Inspection (OSI) Workshop 24 at the National Oceanographic Centre, Southampton. The workshop considered the possibility of conducting an OSI in areas where past experience with nuclear weapons testing is limited or completely lacking, in challenging environments and in areas beyond national jurisdiction, such as the open oceans.

In addition to the CTBTO Science and Technology conferences, the UK has supported the CTBTO Science and Diplomacy symposiums, with the last one held in 2018. Chief Scientific Adviser at the Foreign and Commonwealth Office, Professor Robin Grimes, led the UK delegation and spoke in the panel discussion.

Science diplomacy in support of peace and security.

We are involved in the CTBT Group of Eminent Persons; our representatives are Lord Browne of Ladyton and Susan le Jeune d'Allegeershecque. We also actively support the Friends of the CTBT and signed the declaration in 2018.

The UK maintains the UK National Data Centre, Eskdalemuir Seismometer Array, and hosts 11 monitoring stations, in the UK as well as St Helena, Tristan da Cunha, Ascension Island, Bermuda, and the British Indian Ocean Territory. These monitoring stations include:

- Four infrasound stations
- Three hydroacoustic stations
- Three radionuclide stations
- One auxiliary seismic array
- One radionuclide laboratory, which is one of 16 that provide analytical support to the International Monitoring System

These facilities are backed up by enduring research in a number of areas, notably through the Atomic Weapons Establishment's (AWE) Forensic Seismology Team.

The UK is active in the CTBTO's Working Groups A and B in Vienna where, for example, one of our experts is joint Task Leader for the Draft On-site Inspection Operational Manual and another is chair of the Waveform Expert Group. Experts from AWE, academia and industry are participating as surrogate inspectors in the OSI third training cycle. We have provided funding for a UK Chair to the finance-focused Advisory Group for over ten years. Our work helps ensure that the CTBTO has the necessary funding and working time to build and maintain an effective monitoring regime.

Section II: Reporting on national measures relating to non-proliferation

i. Safeguards

All civil nuclear material in the UK is subject to Euratom safeguards (European Commission Regulation N0 302/2005) and to the terms of the UK/Euratom/IAEA tripartite safeguards agreements (the Voluntary Offer Safeguards Agreement and Additional Protocol), until Euratom Safeguards no longer apply. This follows the UK serving notice of its intention to withdraw from Euratom at the same time as withdrawing from the European Union.

When Euratom safeguards no longer apply in the UK, all civil nuclear material in the UK will be subject to the UK's new bilateral safeguards agreements between the UK and IAEA (the bilateral Voluntary Offer Agreement and the Additional Protocol) and a new domestic safeguards regime, which the Office for Nuclear Regulations will take responsibility for regulating and delivering.

Euratom safeguards obligations stem from Chapter VII (Articles 77–85) of the Treaty establishing the European Atomic Energy Community,³ which requires the European Commission, inter alia, to satisfy itself that nuclear materials are not diverted from their intended uses as declared by users. This is achieved through:

³ <http://eur-lex.europa.eu/en/treaties/dat/12006A/12006A.htm>.

- A requirement that all operators of nuclear installations provide the Commission with Basic Technical Characteristics describing the location and intended activities of their installation;
- A requirement that operators keep and report nuclear material accountancy records;
- Provision for the Commission to inspect installations and records;
- And provision for the imposition of sanctions by the Commission in the event of infringement of the Treaty safeguards obligations. These sanctions can range from a published written warning to withdrawal of the nuclear material concerned.

The various reporting requirements are amplified in Commission Regulation (Euratom) 302/05⁴. Euratom safeguards do not apply to nuclear material intended to meet defence requirements.

UK safeguards obligations for accounting, reporting and verifying civil nuclear material, when Euratom safeguards no longer apply, will stem from the terms of the UK and IAEA bilateral safeguards agreements and requirements in The Nuclear Safeguards (Fissionable Material and Relevant International Agreements) (EU Exit) Regulations 2019 and The Nuclear Safeguards (EU Exit) Regulations 2019, which were made under the powers contained in the Nuclear Safeguards Act 2018 and the Energy Act 2013 (as amended). The Office for Nuclear Regulations (ONR) will be responsible for regulating and delivering safeguards for the UK when Euratom Safeguards no longer apply in the UK.

The ONR will satisfy itself and the IAEA, that nuclear materials are not diverted from their intended uses as declared by users through:

- A requirement that all operators of nuclear installations provide the ONR with Basic Technical Characteristics describing the location and intended activities of their installation;
- A requirement that operators keep and report nuclear material accountancy records;
- Provision for the ONR to inspect installations and records;
- Provision for ONR to prosecute operators in the event of non-compliance of specific regulations in the Nuclear Safeguards (EU Exit) Regulations 2019, linked to the delivery of international obligations.

The various accounting, reporting and verification requirements are detailed in The Nuclear Safeguards (EU Exit) Regulations 2019. The safeguards regulations do not apply to nuclear material intended to meet defence requirements.

Voluntary Offer Safeguards Agreement

The UK Voluntary Offer Safeguards Agreement⁵ with the IAEA and Euratom came into force in 1978. Following the UK notifying of its intention to leave Euratom, the UK signed a new bilateral safeguards agreement (the Voluntary Offer Agreement) with the IAEA on 7 June 2018. Both the trilateral and bilateral safeguards agreements allow for the application of safeguards on all source or special fissionable material in facilities or parts thereof within the UK, subject to exclusions for national security reasons only. Nuclear materials accountancy reports on all civil nuclear material in facilities are provided to the IAEA by Euratom under the trilateral agreements, under

⁴ http://eur-lex.europa.eu/LexUriServ/site/en/oj/2005/l_054/l_05420050228en00010070.pdf.

⁵ <http://www.iaea.org/Publications/Documents/Infcircs/Others/infirc263.pdf>.

the bilateral agreements this is provided by the Office of Nuclear Regulation. Under both agreements, the IAEA may “designate” any facility, or part thereof, for inspection. Currently, some of the plutonium stores at Sellafield and the gas centrifuge enrichment facilities at Capenhurst are designated for IAEA inspection, it is expected this will continue under the new agreement. Both agreements give the UK the right to remove facilities and/or withdraw nuclear material from the scope of the agreement for reasons of national security. However, as part of the 1998 Strategic Defence Review, the UK agreed that any future withdrawals from safeguards would “be limited to small quantities of nuclear materials not suitable for explosive purposes” and undertook to publish information on any such withdrawals⁶.

The UK has published annual information on holdings of civil plutonium since 1986. In 1997, the UK, along with Belgium, China, France, Germany, Japan, Russia, Switzerland and the United States made a commitment to publish annual figures for national holdings of civil plutonium to improve transparency and public confidence. The UK extended this transparency commitment to cover high enriched uranium (HEU) and depleted, natural and low enriched uranium (DNLEU) in the civil nuclear cycle from 1998. The figures for 2017 (the latest to be published) are available here: <http://www.onr.org.uk/safeguards/civilplut16.htm>.

Additional Protocol

The UK Additional Protocol⁷ to the trilateral Voluntary Offer Safeguards Agreement and the bilateral Voluntary Offer Agreement (to be enacted when Euratom Safeguards no longer apply) is based on the model agreement (INFCIRC/540 corr.), and contains measures aimed at the primary objectives of Additional Protocols – to increase the IAEA’s capability to detect any undeclared nuclear material and activities in Non-Nuclear Weapon States or to increase the efficiency of IAEA safeguards. Information, and associated access, is therefore provided on all Protocol-relevant activities that are done in collaboration with or are otherwise relevant to a Non-Nuclear Weapon States, or where the information would improve the effectiveness or efficiency of IAEA safeguards in the UK.

Strengthening IAEA safeguards

The UK supports the IAEA’s continued efforts to strengthen the international safeguards system across the world, which is an integral part of the global non-proliferation regime within the framework of the NPT. One such element of our support to the IAEA is the UK Safeguards Support Programme. Since 1981, the UK has provided practical assistance to support the strengthening of the NPT non-proliferation regime through IAEA safeguards. Currently our priorities are to provide training of IAEA inspectors, analysis of samples provided by nuclear inspectors, regional open source reporting and participation in the Network of Analytical Laboratories (NWAL). Through NWAL, the UK supports non-proliferation by analysing environmental and bulk samples at the request of the IAEA.

The UK also provides support and access to UK expertise outside the UK Safeguards Support Programme, engaging in discussions at the IAEA on: the development of techniques, methods and procedures for safeguarding facilities in the nuclear fuel cycle; the development and assessment of equipment, instruments and methods for application in safeguarding the nuclear fuel cycle; and advice on the further development of safeguards strategies in new and existing activities and plants in the nuclear fuel cycle. The UK supported the delivery of the IAEA’s 2018 Safeguards Symposium, which promoted international engagement on the current and

⁶ <http://www.hse.gov.uk/nuclear/safeguards/withdrawals.htm>.

⁷ <http://www.iaea.org/Publications/Documents/Infcircs/2005/infcirc263a1.pdf>.

future challenges for safeguards implementation. The UK also supported the completion of the Modernization of Safeguards Information Technology (MOSAIC) project, which has increased the productivity of the Safeguards Division.

Implementations of safeguards

The UK believes that a Comprehensive Safeguards Agreement plus an Additional Protocol is the universal verification standard as required by state parties to the NPT.

The Additional Protocol is an important enhancement to safeguards implementation and the non-proliferation regime. It is a necessary change to ensure that safeguards are fit for the challenges of the twenty first century. Only the Additional Protocol can provide credible assurance of an absence of undeclared nuclear material and activities within a state.

In this context, the UK welcomes the entry into force of Additional Protocols in Honduras, Senegal and Thailand in 2017. The UK uses all opportunities to call upon all states that have not yet done so to bring an Additional Protocol into force as soon as possible.

The UK recognises the long-standing practice for states with little or no nuclear activities to conclude a Small Quantities Protocol (SQP) to their safeguards agreement. The UK also recalls the IAEA Board of Governor's decision in 2005 to revise the standard text for SQPs. The UK calls on the 28 states that still have not amended or rescinded their SQP, in line with the IAEA Board decision, to do so.

The UK has also supported the evolution of safeguards implementation including through the State Level Concept. The UK judges that safeguards implementation by the IAEA must continue evolving to address new demands and new challenges incorporating the experience gained from past safeguards implementation and taking advantage of new techniques and technologies.

The State Level Concept enables the IAEA to focus its efforts on areas of greatest safeguards significance. The development and implementation of State Level Approaches results in less predictable in field safeguards activities, increasing their deterrence value. The State Level Concept has also stimulated improvements in the qualitative processes, which underpin the safeguards operation, improved information sharing, information management and internal guidance, and the further development of Acquisition Path Analysis to underpin the identification and prioritisation of Technical Objectives. These improvements, which will be further developed and enhanced, create a more consistent and robust safeguards operation, through which the IAEA provides greater confidence about the non-division of nuclear material. The IAEA has developed a State Level Approach for the implementation of safeguards in the UK.

ii. Export Controls

United Nations Security Council Resolution (UNSCR) 1540

The UK has worked hard to promote full implementation of UNSCR 1540 since its unanimous adoption in 2004. As one of the vice-chairs of the 1540 Committee, the UK works with member states of the United Nations to strengthen efforts to promote universal implementation of the resolution. We work with and through International Organisations and initiatives, including the IAEA and the G7 Global Partnership, to provide a wide range of technical and financial support. This includes delivering improvements in the security of materials, knowledge and know-how in partner countries, facilitating debate and delivering training to help build partners' engagement, capacities and expertise, and maintaining domestic technical and

scientific expertise in counter proliferation, arms control and chemical, biological and rad-nuclear security.

UK export controls and enforcement capabilities enable us to maintain a robust and effective national export control regime, and strengthen international export controls. Following the 2016 comprehensive review of UNSC 1540, the UK played an active role to enhance implementation of the proposals set out in UNSC 2325. This included supporting the 1540 Committee and its working groups to enhance outreach, work with academia and civil society, as well as continuing drive discussions and raise awareness around the threat posed by new and emerging technologies.

Nuclear Suppliers Group

By fulfilling its obligations under the Nuclear Suppliers Group and the Zangger Committee, the UK contributes to minimising nuclear proliferation while ensuring that eligible states are able to access nuclear technology for peaceful uses. We have implemented effective strategic export controls in regards to its nuclear transfers in line with the Nuclear Suppliers Group and Zangger Committee control lists. Relevant exports are assessed against robust Criteria and stated UK government export control policies. A robust enforcement system, underpinned by the Export Control Order 2008, operates to deter attempts to breach the controls and help facilitate legitimate transfers.

We are an active supporter of the work of the Nuclear Suppliers Group and Zangger Committee. We provide a secretariat for Zangger Committee meetings and contribute extensive technical expertise to the Nuclear Suppliers Group's Technical Experts Group, ensuring that the Nuclear Suppliers Group's control lists reflect changing proliferation threats and emerging technologies. We also share licensing and enforcement information with fellow Participating Governments, both on an ad hoc basis and at the Licensing and Enforcement and Information Exchange Meetings.

iii. Nuclear Security

Civil Nuclear Security

The UK's security regime for the civil nuclear industry is robust and effective and fully meets international standards. Security arrangements are based on the principles of the graded approach and defence in depth and are kept under constant review.

In 2010, the UK deposited its instruments of ratification of the 2005 Amendment to the Convention on the Physical Protection of Nuclear Material (CPPNM), which entered into force in May 2016. The UK has in place legislation which implements the Convention and its Amendment. The UK ratified the International Convention for the Suppression of Acts of Nuclear Terrorism (ICSANT) in 2009. It provides a legal basis for international cooperation to investigate, prosecute and extradite those connected to terrorist acts involving radioactive material or a nuclear device. We actively encourage all states to sign and ratify the ICSANT, CPPNM and its 2005 Amendment (CPPNM/A) at the earliest opportunity. The UK funded the United Nations Office on Drugs and Crime (UNODC) to organise a regional conference in Thailand to promote ratification of these Conventions in December 2014. We supported the UNODC and IAEA to organise a larger workshop targeting over 50 countries in October 2015.

The UK is participating in high-level preparatory discussions to ensure a meaningful CPPNM/A Review Conference which is scheduled to take place in 2021. The first technical Review Conference meeting will be held in the summer of 2019. In preparation for this, the UK will be reviewing the Convention and considering its

adequacy as well as identifying any areas which need to be strengthened. The UK also remains an active contributor to the Canadian-led G7 Nuclear Safety and Security Group (NSSG) global demarche to universalise CPPNM/A and ICSANT.

Civil nuclear security regulation

The UK's Office for Nuclear Regulation (ONR) is adopting an outcome-focused approach to regulating civil nuclear security, embodied in the publication in March 2017 of its Security Assessment Principles (SyAPs) guidelines. While maintaining the high standards of nuclear security that already exist in the UK's civil nuclear sector and enhancing cyber protections, this approach will provide civil nuclear sites with increased scope to develop innovative security solutions that align with their business needs. SyAPs also outlines enhanced requirements for the industry to have effective cyber security mitigations in place.

Nuclear information security

The UK has promoted the need to secure sensitive nuclear information within the framework of the Nuclear Security Summit, the Global Partnership and the IAEA. In 2017, the UK published our Civil Nuclear Cyber Security Strategy. The strategy was agreed between the UK government, ONR and industry, and sets out a path to keep the UK civil nuclear sector ahead of rapidly evolving threats to, and vulnerabilities in, software and equipment.

The strategy's five year plan details the desired outcomes over that period, whereby industry will be better equipped to understand and tackle cyber security. This approach aims to ensure that the UK civil nuclear sector has a mature approach to understanding the cyber threat and is delivering outcome-focussed solutions, approved by the regulator.

The strategy also supports the UK government in ensuring that the UK has a secure and resilient energy system, by ensuring that the civil nuclear sector is able to defend against, recover from, and is resilient to evolving cyber threats. It also supports the safe, responsible and cost effective management of the UK's energy legacy.

International Physical Protection Advisory Service (IPPAS)

In February 2016, the UK became the first Nuclear Weapons State to have hosted both an initial IPPAS security peer review mission, completed in 2011, and a follow-up mission in 2016. The 2011 initial mission performed a national-level review of the UK's legal and regulatory framework for civil nuclear security, as well as a review of the security measures and procedures in place to execute this framework at facilities and during transport. In 2016, the follow-up mission reviewed the actions taken in response to the 2011 mission's recommendations and provided further advice, while identifying examples of good practice to share with other member states. Following this, in November 2016, the UK funded and hosted a conference to mark 20 years of these peer review missions.

Support for the IAEA

The UK supports the IAEA in all areas of its work, including nuclear safety and security. The UK actively participates in the Nuclear Security Guidance Committee and provides experts for IPPAS and other advisory missions.

The UK is the second biggest member state contributor to the IAEA's extra-budgetary Nuclear Security Fund (NSF), which enables the IAEA to deliver its Nuclear Security Plan 2018–2021 and assist states, upon request, in the development, enhancement and sustainability of their national nuclear security regimes. Since 2010,

the UK has contributed over £40 million to the NSF, which has supported various nuclear security enhancement projects in over a dozen countries and enhanced the IAEA's facilities and capability to deliver this assistance. In support of the latter, in 2018 the UK announced a contribution of around £2 million to support the development of a Physical Protection Systems Demonstration Lab at the IAEA's Seibersdorf Laboratories near Vienna. This will contribute further to Seibersdorf's ongoing modernisation programme and add state-of-the-art facilities to enable member states to test and undertake training on various physical protection technologies.

The UK has also contributed to other projects via the IAEA with nuclear security and non-proliferation benefits, including a contribution of around £650,000 towards the conversion of Nigeria's research reactor to use LEU fuel and the safe removal of its HEU core. Additionally, in 2018 the UK pledged around £250,000 through the Peaceful Uses Initiative for the procurement of an X-ray irradiator and associated research to develop more secure methods to control *Aedes* mosquitoes as vectors of human pathogens, particularly the Zika virus, as part of the IAEA's Sterile Insect Technique.

Providing international leadership following the Nuclear Security Summit process.

The UK participated actively in the Nuclear Security Summits held in 2010, 2012, 2014 and 2016. The fourth and final Nuclear Security Summit took place in April 2016, and the UK Prime Minister led the UK delegation. The UK announced commitments to lead international efforts to strengthen the cyber security of nuclear plants, to undertake the largest single movement of HEU, and to invest over £10 million during 2016 to improve nuclear security standards worldwide. The UK continues to be an active member of the Nuclear Security Contact Group to maintain the global momentum generated by the Nuclear Security Summits.

Sharing best practice in civil nuclear security

UK experts regularly participate in events organised by the Global Initiative to Combat Nuclear Terrorism (GICNT), which is co-chaired by the United States and Russia and brings together representatives from 88 countries to build capacity to prevent, detect and respond to nuclear terrorism. Since 2017, the UK has chaired the initiative's Nuclear Detection Working Group and facilitated or contributed to numerous detection, response and forensics exercises over the last two years. In February 2018, the UK hosted a workshop in London for GICNT members on emergency planning and response, and went on co-host cross-disciplinary exercise in Canada, reviewing detection, response and investigative capabilities within the context of legal instruments CPPNM/A and ICSANT and highlighted the need for strong regulatory and legal frameworks to meet states' obligations under the conventions.

Defence nuclear security regulation

The UK takes its responsibilities for protecting its defence nuclear material very seriously. Arrangements to account for and control defence nuclear material are robust – they are comparable with, or exceed, those for civil nuclear materials – and based on UK legislation and industry best practice. Our security arrangements are based on the principle of no unauthorised access, through multi-layered, integrated, security arrangements that are designed to counter a range of threats and which are kept under review. We maintain robust national security controls on personnel responsible for, or who have access to, defence nuclear material and associated information. We also have a well-established and on-going programme of activity to

protect defence networks and the information they hold from unauthorised access and misuse.

The UK's Defence Nuclear Security Regulator provides assurance as to these security arrangements through robust independent processes, in line with best practice internationally and in the UK civil nuclear sector. The regulator conducts routine inspections and assessments of physical, personnel, information and cyber security arrangements, in order to provide further confidence that the UK's defence nuclear material is secure.

Defence nuclear safety regulation

The UK has set a benchmark standard for defence nuclear safety regulation and assurance, specifically through the publicly available Joint Service Publications on the regulation of our Naval Nuclear Propulsion and Nuclear Weapon Programmes. These standards are overseen by the Defence Nuclear Safety Regulator (DNSR, part of the wider Defence Safety Authority).

DNSR is responsible for assuring the nuclear safety of both the UK's Naval Nuclear Propulsion and Nuclear Weapon Programmes, to the exceptionally high standards required by applicable legislation, defence policy and relevant good practice within the nuclear industry.

DNSR consists of civilian and naval staff who are predominately nuclear specialist engineers and scientists, drawing on subject matter expertise and capabilities from outside defence. As well as examining arrangements for the handling of defence nuclear material, DNSR inspectors also examine nuclear designs and activities, and are responsible, as the competent authority within defence, for approving the containers used for transportation of defence nuclear materials and, specifically for nuclear weapons, the transport activity itself. DNSR works closely with the statutory nuclear safety regulator, the Office for Nuclear Regulation, and with the UK's environmental regulators, as well as with other defence sector regulators.

iv. Nuclear weapon-free zones

As part of our commitment to the NPT, the UK continues to support the principle of Nuclear Weapon Free Zones. As stated in our 2015 SDSR, we recognise the role that negative security assurances can play in strengthening the non-proliferation regime and enhancing regional and international security.

Existing zones

The UK has signed and ratified protocols to four nuclear weapon free zone treaties, granting treaty-based negative security assurances to almost 100 countries in Latin America (Treaty of Tlatelolco), South Pacific (Treaty of Raratonga), Africa (Treaty of Pelindaba) and Central Asia Nuclear Weapon Free Zone (CANWFZ). We also support the parallel political declarations adopted by the Nuclear Weapon States and Mongolia concerning that country's nuclear weapon free status.

South East Asian Nuclear Weapon Free Zone

We will continue to pursue signing protocols to existing nuclear weapon free zones as a practical way of strengthening our existing negative security assurances. In conjunction with other Nuclear-Weapon States, the UK will continue to engage with state parties to the Southeast Asia Nuclear Weapon Free Zone (SEANWFZ) Treaty in order to allow signature of a Protocol to that Treaty in the near future.

Middle East Weapons of Mass Destruction Free Zone

We remain fully committed to the 1995 Resolution on the Middle East, and to the establishment of a zone in the Middle East free of nuclear and all other weapons of mass destruction and their delivery systems. It is our long-held view that all processes related to such a zone should be based on consensus. As a co-sponsor, we fully recognise our responsibilities under the 1995 Resolution on the Middle East. We remain prepared actively to support and facilitate renewed regional dialogue aimed at bridging the differing views in the region on arrangements for a conference that is freely arrived at by all states in the region as set out in the NPT 2010 Action Plan.

v. Compliance and other related issues/concerns*Democratic People's Republic of Korea (DPRK)*

The UK fully supports efforts to achieve the complete, verifiable, and irreversible denuclearisation of the DPRK and we believe that negotiations are the best way to make progress this goal. Until the DPRK takes concrete steps towards this goal sanctions must continue to be strictly enforced. We urge the DPRK to negotiate in good faith and stick to its commitments. Only by doing so can it secure a more stable and prosperous future for the people of the DPRK.

The UK, alongside like-minded partners, is actively working to ensure the comprehensive enforcement of all United Nations Security Council resolutions relating to the DPRK. We continue to support, and cooperate fully, with the United Nations DPRK Panel of Experts in their work. The UK has not only reported violations of DPRK sanctions to the Panel, but has also actively assisted in providing information relevant to the Panel's investigations. The UK has also deployed four Royal Navy vessels to engage in maritime sanctions enforcement.

The UK is working to raise awareness of the DPRK's illicit activities that are in clear violation of sanctions measures. We have funded several regional outreach activities including workshops in 2018 in East Africa and South East Asia. We have also previously provided funding to run a regional workshop in close partnership with the United Nations Panel of Experts in Johannesburg. Aimed at both the public and private sector, it raised awareness of these illicit activities and encouraged the effective implementation of sanctions measures.

vi. Other contributions to nuclear weapons non-proliferation*Iran*

The UK was a negotiating party and signatory to the Joint Comprehensive Plan of Action (JCPOA), agreed in July 2015 between Iran, China, France, Germany, Russia, the UK and the United States. Implementation of the JCPOA began in January 2016. The deal means that for 10 years it will take Iran at least 12 months to produce enough fissile material for a weapon. Iran has also committed never to pursue nuclear arms. We are committed to denying Iran all pathways to a nuclear weapon and to ensuring Iran complies with all of its nuclear-related obligations and commitments, including its obligations under UNSCR 2231, the NPT, and its IAEA safeguards agreement, including the Additional Protocol. The UK regards the JCPOA as a crucial agreement that makes the world a safer place by neutralising the threat of a nuclear-armed Iran.

Iran's nuclear activity is monitored and reported by the IAEA, which has affirmed compliance to the JCPOA in every report since implementation. The UK remains committed to the deal as long as Iran meets its nuclear commitments in full. The UK supports the IAEA financially and has confidence in its professional,

impartial and robust delivery of the task of verification and monitoring in Iran, in line with standard safeguards practice and making use of all information available to it. The UK is an active member of the IAEA Board of Governors, and continues to emphasise the importance of the independence and technical expertise of the Agency.

Since the implementation of the JCPOA, the UK has provided over £2 million in support of the agency's verification work on the deal. The UK also supports JCPOA implementation through its co-chair position on the Arak Modernisation Project, which it has held since May 2018. The purpose of the project is to convert the Arak Heavy Water Reactor to a research reactor with a non-proliferative design.

The UK is concerned about Iran's ballistic missile programme. UNSCR 2231 (2015) calls on Iran not undertake any activity related to ballistic missiles designed to be capable of delivering nuclear weapons, including launches using such technology. Since the adoption of the UNSCR 2231, Iran has conducted various launches using ballistic missile technology, which is inconsistent with UNSCR 2231.

Global Partnership

The UK makes a major contribution to the G7 Global Partnership against the Spread of Materials and Weapons of Mass Destruction. Under the UK Presidency in 2013, the Global Partnership established mechanisms to better match Global Partnership partners' funds and expertise with specific security requirements, and improve project coordination and implementation. The UK will continue its Global Partnership leadership as part of its G7 Presidency in 2021. From 2002–2019, the UK has committed over £350 million of funding to GP projects.

Our largest contribution to the Global Partnership is through the Global Nuclear Security Programme that has supported improvements in nuclear security in over 20 countries. The UK works with international partners to address a range of international nuclear security and proliferation threats, including through minimising civilian stocks of High Enriched Uranium, enhancing border security and counter-smuggling capabilities, and ensuring sustainability through developing effective nuclear security culture in relevant organisations and facilities. The UK continues to deliver Global Threat Reduction Programme projects in collaboration with multiple international partners that aim to:

- improve the security of fissile materials;
- reduce the number of sites containing sensitive nuclear and radiological material and improve security of remaining sites;
- enhance nuclear security culture and the security of nuclear materials in transit; and,
- prevent non-state actors acquiring proliferation-relevant information and expertise.

Academic Technology Approval Scheme (ATAS)

In the UK, ATAS seeks to stop the spread of knowledge and skills from academic programmes that could be used in the proliferation of Weapons of Mass Destruction and their means of delivery.

Academic institutions have a mandatory obligation to comply with UK visa requirements. Obtaining a certificate under the scheme is a requirement for all students applying for student visas and intending to enter or remain in the UK to undertake post-graduate studies or research in certain designated subjects.

Section III: Reporting on national measures relating to the peaceful uses of nuclear energy

i. Promoting peaceful uses

The UK has long been an advocate for, and will continue to promote, the peaceful uses of nuclear energy. The development of civil nuclear energy must be accomplished without compromising safety, security or non-proliferation, and in accordance with safeguards. In line with the rights expressed in Article IV of the NPT, and on the condition that any countries doing so are in full compliance with their non-proliferation obligations, we recognise the inalienable right of all Parties to research, develop, and utilise civil nuclear energy for their own benefit.

Industrial Strategy

In November 2017, the UK government launched its ambitious Industrial Strategy, which sets out a long-term plan to boost the productivity and earning power of people throughout the UK. Furthermore, it details how we will help businesses create better, higher-paying jobs in every part of the UK with investment in the skills, industries and infrastructure of the future.

One of the four Grand Challenges identified in the Industrial Strategy is clean growth. The UK has put clean growth at the heart of its Industrial Strategy to increase productivity, boost people's earning power and ensure the UK continues to lead the world in efforts to tackle climate change, including through the decisions taken on new nuclear. We support the IAEA's international conference on Climate Change and the Role of Nuclear Power in October 2019. This will provide an opportunity to discuss the pivotal role that nuclear power can play, as a low-carbon energy source, to mitigate the effects of climate change, in support of member states' obligations towards the Conference of Parties (COP) 21 Paris agreement. We hope to see climate change and nuclear power experts from a broad range of countries participate in this event, as well as other relevant international organisations, to ensure an informed, diverse and lively dialogue takes place on this important topic.

Developments in civil nuclear energy

The UK was the first country to establish a civil nuclear industry with the opening of the Calder Hall reactor in 1956. Today, new nuclear has a crucial role to play as we seek to transition to a low carbon society. It is the only technology that is currently proven and can be deployed on a sufficiently large scale to provide continuous low carbon power. Nuclear is also key to ensuring continued energy security and availability in the UK. It is a central tenet of our energy policy that diversity of supply assures security of supply. Whether we are considering the number of different suppliers of our gas, or in this case, the number of different technologies we rely on for our power, maintaining diverse sources of supply is important.

The UK's Nuclear Sector Deal enables the UK government and industry to work in partnership to enhance safety and develop a vibrant future workforce at the forefront of nuclear innovation. The Sector Deal includes a strong commitment to increasing the diversity of the workforce so that more women can take advantage of new dedicated nuclear colleges and other national schemes. A diverse workforce and diverse teams create greater diversity of thought by embracing different views, opinions and ideas - which is key to harnessing the next level of innovation and productivity in the nuclear sector.

Small and advanced reactors have the potential to deliver the cost reductions outlined in the Nuclear Sector Deal through technology and production innovations,

whilst creating high-skilled jobs and helping the UK meet our clean growth targets. Five mature small modular reactors (SMRs) are taking part in an early engagement process with the UK's Office for Nuclear Regulation and the Environment Agency to better understand the UK regulatory system. We stand ready to share information and experience with member states and the IAEA as progress is made and lessons are learned, and fully support the Agency's role in enhancing the safety of SMRs internationally as they move from concept towards implementation.

The UK government is also committed to implementing geological disposal for the long term safe and secure management of high-level radioactive waste. On 19 December 2018, the UK government published a policy paper on the process of finding a Geological Disposal Facility site. The paper sets out the UK government's overarching framework for future planning decisions and how the UK government will work with communities. The publication of this final policy marks the start of a new national process to find a suitable site to host a Geological Disposal Facility.

The UK has a strong commitment to transparency on civil nuclear matters. The UK government holds a regular Nuclear Non-Governmental Organisation Forum, in which members of the public and NGOs provide constructive challenge on pertinent issues to senior UK government officials and regulatory bodies.

The UK also reports to the IAEA Convention on Nuclear Safety and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.

The UK uses bilateral channels to actively encourage other member states to become Contracting Parties to the IAEA Conventions, and fields a vast array of peer reviewers to help underpin the Agency's provision of such services. In this context, the UK is looking forward to welcoming the upcoming Integrated Regulatory Review Service (IRRS) in November 2019.

ii. Technical assistance through the IAEA to its member states

The NPT provides the framework and confidence for the safe and secure transfer of nuclear power and technologies. This framework, supported by the work of the IAEA, is helping states to improve socio-economic development globally and contribute to achievement of the United Nations Sustainable Development Goals by 2030 in the areas of human health, food and agriculture, water and the environment. The IAEA's work in this field is a practical demonstration of the NPT in action. In this regard, the UK strongly supports the IAEA's Nuclear Applications and Technical Cooperation departments.

One of the primary delivery vehicles for the transfer of nuclear expertise and technologies is the Technical Cooperation Programme. This provides necessary support to enable countries to benefit from the use of nuclear technologies in a safe, secure and effective way. It is important that the IAEA has certainty of funding and so we pay our Technical Cooperation Fund contributions in full and on time. For 2018, the UK contribution to the Technical Cooperation Fund was £3.3 million.

The UK has also contributed over £850,000 in extra-budgetary support to the IAEA for the Renovation of the Nuclear Applications Laboratories (ReNuAL) and ReNuAL+ projects, as well as a recent contribution to support the establishment of a Neutron Science Facility in the Nuclear Science and Instrumentation Laboratory, at Seibersdorf. These contributions ensure that Member States continue to see the full and sustained benefits of the peaceful uses of nuclear technology through services and assistance provided by the IAEA.

The UK regularly contributes subject matter expertise and technical assistance to further the development and sustainability of peaceful uses of nuclear technology,

including co-ordinated Research Projects through contributing to the drafting of IAEA standards and guidance, and by participating in peer review missions to other member states.

We strongly support opportunities to foster creative approaches to advance the Agency's activities related to nuclear science and technology, and commend Costa Rica and Japan's successful chairing of the first ever conference dedicated exclusively to this topic in November last year. The UK was pleased to contribute to the conference with the UK delegation including Professor Robin Grimes, the UK's Chief Scientific Adviser for nuclear science and technology and Dr Fiona Rayment, the Executive Director of the Nuclear Innovation and Research Office, and a thought leader in nuclear skills, gender equality and innovation. We will continue to work with the Agency to identify further areas where the UK's expertise and support can be harnessed to advance the development of the peaceful uses of nuclear science and technology, in line with the outputs of the Conference. We continue to provide technical expertise and access to our world leading research institutes to assist the IAEA's research and development. UK institutions are currently engaged in over 30 Co-ordinated Research Projects covering environmental issues, water resources, human health, medical research, food and agriculture.

The UK works with the IAEA and other member states to encourage fair balance, sound financial management and effective governance in the Technical Cooperation Programme, in order to ensure that lower income countries are best able to benefit from the available funding.

iii. Civil Nuclear Safety and Civil Nuclear Liability

The UK is a strong supporter of co-ordinated international efforts towards the continuous improvement of nuclear safety across the globe. As part of our commitment to achieving high nuclear safety standards, the UK aims to show a leadership role in meeting its obligations as a Contracting Party to relevant international nuclear safety instruments such as the Convention on Nuclear Safety and the Joint Convention on the Safe Management of Spent Fuel and Radioactive Waste. The UK is a Contracting Party to the Paris Convention and Brussels Supplementary Convention on nuclear third party liability.

The UK proactively participated in the sixth Review meeting of the Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management Nuclear Safety in May 2018. Through the peer review process, the UK's Country Group commended the UK's waste hierarchy characterisation as areas of "good performance", the Convention's highest possible accolade. The UK continues to encourage states to become party to the various nuclear safety conventions.

The UK welcomes the fact that the Amendment to the Convention on the Physical Protection of Nuclear Material (aCPPNM) came into force in May 2016. The UK deposited its instruments of ratification of the 2005 Amendment to this Convention in 2010. We encourage the full and universal implementation of the aCPPNM.