THE UK CONTRIBUTION TO THE G8 GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS AND MATERIALS OF MASS DESTRUCTION, 2002–06

Paul Cornish

CHATHAM HOUSE

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An International Security Programme Report

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Glossary of Terms and Abbreviations

AMEC	**Arctic Military Environmental Cooperation**
BNFL	**British Nuclear Fuels Ltd**
BW	**Biological Weapon**
CBRN	**Chemical, Biological, Radiological, Nuclear**
CEE	**Central and Eastern Europe**
CIS	**Commonwealth of Independent States**
CNCP	**Closed Nuclear Cities Partnership (UK/Russian Federation)**
CTR	**Cooperative Threat Reduction**
CW	**Chemical Weapons**
CWC	**Chemical Weapons Convention**
CWD	**Chemical Weapons Destruction**
CWDF	**Chemical Weapons Destruction Facility**
Dstl	**Defence Science and Technology Laboratory (UK)**
DTI	**Department of Trade and Industry (UK)**
EBRD	**European Bank for Reconstruction and Development**
EC/EU	**European Community/European Union**
EYF	**End Year Flexibility (UK)**
FCO	**Foreign & Commonwealth Office (UK)**
FSU	**Former Soviet Union**
G8GP	**G8 Global Partnership**
GICNT	**Global Initiative to Combat Nuclear Terrorism**
GTRI	**Global Threat Reduction Initiative**
HEU	**Highly Enriched Uranium**
IAEA	**International Atomic Energy Agency**
IPPE	**Institute for Physics and Power Engineering**
ISTC	**International Science and Technology Centre (Moscow)**
KEDO	**Korean Peninsula Energy Development Organization**
LRW	**Liquid Radioactive Waste**
MoD	**Ministry of Defence (UK)**
MoU	**Memorandum of Understanding**
NDEP	**Northern Dimension Environmental Partnership**
NIIAR	**Scientific Research Institute of Atomic Reactors**
NPT	**Nuclear Non-Proliferation Treaty**
NSC	**New Safe Confinement**
NSP	**Nuclear Safety Programme (UK)**
NW	**Nuclear Weapons**
Rosatom	**Federal Atomic Energy Agency (Russia)**
SFA	**Spent Fuel Assembly**
SNF	**Spent Nuclear Fuel**
SRW	**Solid Radioactive Waste**
UKAEA	**United Kingdom Atomic Energy Authority**
WMD	**Weapons of Mass Destruction**
ZATO	**Closed Administrative Territorial Unit (Closed Nuclear City)(FSU)**

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A list of meetings, discussions and interviews can be found at Annex I, and a list of published sources at Annex II.

P.C.

Executive Summary

The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction was established at the G8 summit meeting in Kananaskis, Canada in June 2002. The Kananaskis summit produced a new prescription for international cooperation in non-proliferation. The 'ten plus ten over ten' formula was intended to provide the means for tighter control over chemical, biological, radiological and nuclear (CBRN) weapons and materials, initially in Russia and then elsewhere, and particularly to prevent terrorist acquisition of such devices and technologies. The United States agreed to commit US$10 billion, with a further US$10 billion to be committed by other donors (including Russia) over a period of ten years. In the founding document of the Global Partnership, the 'Statement by G8 Leaders', the following were listed as 'among our priority concerns': the destruction of chemical weapons; the dismantlement of decommissioned nuclear submarines; the disposal of fissile materials; and finding alternative employment for former weapons scientists. The UK government had been contributing to work in this field for several years before Kananaskis, and has been a leading participant in the G8 Global Partnership since its inception.

This report offers an independent, non-governmental review and evaluation of the United Kingdom's participation in the Global Partnership, in order to judge the efficiency and effectiveness of the UK contribution to date, and to inform future policy on the allocation of resources. After a summary of the background to the issues, the report is presented in four substantive sections.

Section 2 provides a Review of Strategy and Operations. The UK government has consistently presented its goals clearly and in an easily communicable manner, and these goals have been set and pursued in a pragmatic, goal-oriented spirit. The government has also published a series of detailed annual reports in which policy challenges, progress achieved and future plans are set out. A characteristic of the UK contribution to the Global Partnership has been to undertake projects which are technically challenging, have clear end benefits and offer good prospects of success. Like all governments and relevant international bodies, the United Kingdom must be concerned that CBRN weapons, technologies, know-how and materials might be acquired by state and non-state proliferators and terrorists. But within the Global Partnership, the United Kingdom's focus has been on practical, incremental steps rather than on the pursuit of an overarching solution to the challenge of international proliferation.

Throughout the course of the Kananaskis project the United Kingdom has been especially sensitive to the Russian perspective, as a sovereign government receiving international assistance in various sensitive areas of national security and industrial policy. But the UK government has been wary of entanglement in its relationship with Russia and has not positioned itself as the one-stop solution to Russia's problems. The United Kingdom's characteristic pragmatism is in evidence here. Like other Global Partnership donor governments, it can only work in geographical and functional areas where legal agreements have been drawn up, covering liability, tax exemption and access to project sites. Without such agreements, it would be impossible, or at least very unwise, to initiate complex and expensive engineering and infrastructure projects.

The United Kingdom has selected four 'broad objectives' to govern its participation in the Global Partnership: the security of nuclear weapons and expertise; the safety and regulation of nuclear facilities in the Former Soviet Union; environmental clean-up and decommissioning; and assisting Russia in meeting its obligations under the Chemical Weapons Convention. Each of

these objectives is supported by a range of projects and initiatives, and there are no obvious gaps between strategic objectives and operational activity. That said, the United Kingdom's work in the biological area is rather understated at the strategic level and in terms of declared policy. Many analysts of CBRN proliferation regard biological weapons as an extremely potent and all too available weapon of mass destruction, particularly attractive to terrorist groups. There is a case, therefore, for giving this issue more prominence in UK Global Partnership strategy.

Section 3 of the report – **Matching Resources to Strategy** – examines the correlation between the United Kingdom's Global Partnership strategy and the level and structure of funding. It is essential to note that the UK pledge at Kananaskis was for 'up to' US$750 million, with 'up to' US$100 million of that total subsequently set aside for chemical projects. In both cases, the UK pledge was intended to be a ceiling, and it would remain for the government to decide how much of the pledged figures would be spent, on which projects, where and at what pace. The United Kingdom has supported a wide range of Global Partnership activities, but expenditure patterns show that priority has indeed been accorded to the UK strategic goals of nuclear security, nuclear safety (now running down), nuclear clean-up and decommissioning in Northwest Russia, and chemical weapons disposal. Resources and strategy are closely matched, in other words. Public spending plans can change, but there are at present no obvious reasons to suppose that the United Kingdom Global Partnership budget will not be able to support planned projects and activities up to 2012, and for a period beyond while projects run their course. Overall, the United Kingdom's financial commitment to the Global Partnership was found to be careful and measured, and can be described as strategy-led, rather than expenditure-driven.

Section 4 discusses **Performance Assessment**. While politically and financially necessary, the measurement of national performance in the context of the Global Partnership is methodologically difficult, to the point of being impossible. Across the Global Partnership, performance assessment is very under-developed, even at the national level. Within the Global Partnership as a whole, budgets, expectations and activities vary widely. Comparisons between donor governments are, consequently, difficult to make, even in what should be relatively straightforward matters of financial efficiency and rates of overhead. To a large extent, the explanation is that the Global Partnership is an extraordinarily complex, multinational undertaking, on an unprecedented scale. Furthermore, the thresholds of success – namely the prevention of proliferation and terrorist access to and use of CBRN weapons and materials – are exceptionally high and long-term, as well as logically difficult to prove, making it doubly difficult to gauge the immediate merits of a given Global Partnership activity. Nevertheless, an overall impression of UK performance can be formed, using a selection of performance indicators. Five indicators are examined in the paper:

- Policy Consistency;
- Operational Efficiency;
- Comparative Pledge/Expenditure Ratios;
- Comparative Outputs; and
- Multiplier Effect.

These indicators all point in broadly the same direction: by any reasonable standards, the United Kingdom's performance in the Global Partnership ranges from 'acceptable' to 'exceptional'.

Future Priorities for the United Kingdom are discussed in Section 5. The central conclusion here is that the United Kingdom's priority for the remaining years of the Kananaskis process should be to ensure that the initiatives undertaken and projects begun must all be pursued to completion, within the time available and within budget. However, it makes little sense to analyse the United Kingdom's priorities in national terms alone; it is firmly in its national interest that the multilateral effort of the Global Partnership should succeed. Overall, therefore, the UK's strategic priority should be to pursue its national goals in ways which complement and reinforce the collective effort. With this dual objective in mind, the UK is in a good position to make the obvious argument that the Global Partnership is best supported by the practical achievements of donor governments, and that this work can be pursued without the need for an elaborate threat assessment agreed between all donors and beneficiaries of the Global Partnership. A comprehensive Global Partnership threat assessment makes the best the enemy of the good, by assuming a level of action and decision-making which is, at least for the present, rather rudimentary, and by questioning the rationale for and pursuit of national priorities within the Global Partnership. Enough is already known about the dangers of spent nuclear fuel and chemical munitions, for example, for these to be addressed by donor governments as a matter of urgent national interest, and to the benefit of the Global Partnership as a whole. The United Kingdom can also make the argument, from experience and practical achievement, that the problems being confronted by the Global Partnership are to some extent interdependent. Chemical, biological, radiological and nuclear weapons and materials are of course very different from each other, and they present different technical, political and security challenges for those wishing to prevent proliferation. But there is also a case for treating these different technologies as parts of a single problem; for a determined terrorist seeking a weapon of mass effect, tight controls in one area will simply divert his attention to one of the other technologies on offer. The non-proliferation fence must therefore be high, and must have no gaps. Thus, while the Global Partnership should work towards the most ambitious targets (the disposition of separated plutonium, for example), it would be a mistake to overlook the most obvious, such as the dismantlement of submarines, the safe storage of spent nuclear fuel, the employment of former weapons scientists and the destruction of chemical munitions. Budgets permitting, there is one area in which the United Kingdom could consider expanding its portfolio; by facilitating work on biological projects and supporting Russian efforts in bio-related counter-terrorism.

From 2002 to 2006 the UK contribution to the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction has been well planned and organized, appropriately funded and efficient, and – above all – effective. For the remaining years of the Global Partnership, the United Kingdom's central objective must be to ensure that the broad portfolio of UK-sponsored projects and initiatives be brought to a successful conclusion, on schedule and within budget. In so doing, its national interests will be served, as will the collective goals of the Global Partnership. The UK is a G8 member and a long-standing contributor to threat reduction activities of the sort now being undertaken by the Global Partnership. As such, it sets an example for other donors and potential donors to follow: by practical achievement; by showing that the United Kingdom's national objectives can be pursued in a collective context; and by demonstrating that with careful management, pledges to the Global Partnership can and should be converted into real and productive expenditure.

1 THE GLOBAL PARTNERSHIP AGAINST THE SPREAD OF WEAPONS AND MATERIALS OF MASS DESTRUCTION

Background: G8 Summit, Kananaskis 2002

The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction was established at the G8 summit meeting in Kananaskis, Canada in June 2002. The Kananaskis summit produced a new prescription for international cooperation in non-proliferation. The 'ten plus ten over ten' formula was intended to provide the means for tighter control over chemical, biological, radiological and nuclear (CBRN) weapons and materials, initially in Russia and then elsewhere,[1] and particularly to prevent terrorist acquisition of such devices and technologies. The United States agreed to commit US$10 billion, with a further US$10 billion to be committed by other donors (including Russia) over a period of ten years. In the founding document of the Global Partnership, the 'Statement by G8 Leaders', the following were listed as 'among our priority concerns': the destruction of chemical weapons; the dismantlement of decommissioned nuclear submarines; the disposal of fissile materials; and finding alternative employment for former weapons scientists.

G8 leaders invited other countries to join the commitment to 'six principles to prevent terrorists, or those that harbour them, from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology'. The six principles were set out as follows:

1. Promote the adoption, universalization, full implementation and, where necessary, strengthening of multilateral treaties and other international instruments whose aim is to prevent the proliferation or illicit acquisition of such items; strengthen the institutions designed to implement these instruments.

2. Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage and domestic and international transport; provide assistance to states lacking sufficient resources to account for and secure these items.

3. Develop and maintain appropriate effective physical protection measures applied to facilities which house such items, including defence in depth; provide assistance to states lacking sufficient resources to protect their facilities.

4. Develop and maintain effective border controls, law enforcement efforts and international cooperation to detect, deter and interdict in cases of illicit trafficking in such items, for example through installation of detection systems, training of customs and law enforcement personnel and cooperation in tracking these items; provide assistance to states lacking sufficient expertise or resources to strengthen their capacity to detect, deter and interdict in cases of illicit trafficking in these items.

5. Develop, review and maintain effective national export and transshipment controls over items on multilateral export control lists, as well as items that are not identified on such lists but which may nevertheless contribute to the development, production or use of nuclear, chemical and biological weapons and missiles, with particular consideration of end-user, catch-all and brokering aspects; provide assistance to states lacking the legal and regulatory infrastructure, implementation experience and/or resources to develop their export and transhipment control systems in this regard.

6. Adopt and strengthen efforts to manage and dispose of stocks of fissile materials designated as no longer required for defence purposes, eliminate all chemical weapons, and minimize holdings of dangerous biological pathogens and toxins, based on the recognition that the threat of terrorist acquisition is reduced as the overall quantity of such items is reduced.

Finally, the G8 leaders recorded their willingness to work in bilateral and multilateral partnerships to develop 'new or expanded cooperation projects' which would address non-proliferation, disarmament, counter-terrorism and nuclear safety issues (including environmental). Projects undertaken in these areas would be intended to enhance 'strategic stability, consonant with our international security objectives and in support of the multilateral non-proliferation regimes', and would be shaped by the following nine 'guidelines':

1. Mutually agreed effective monitoring, auditing and transparency measures and procedures will be required in order to ensure that cooperative activities meet agreed objectives (including irreversibility as necessary), to confirm work performance, to account for the funds expended and to provide for adequate access for donor representatives to work sites;

2. The projects will be implemented in an environmentally sound manner and will maintain the highest appropriate level of safety;

3. Clearly defined milestones will be developed for each project, including the option of suspending or terminating a project if the milestones are not met;

4. The material, equipment, technology, services and expertise provided will be solely for peaceful purposes and, unless otherwise agreed, will be used only for the purposes of implementing the projects and will not be transferred. Adequate measures of physical protection will also be applied to prevent theft or sabotage;

5. All governments will take necessary steps to ensure that the support provided will be considered free technical assistance and will be exempt from taxes, duties, levies and other charges;

6. Procurement of goods and services will be conducted in accordance with open international practices to the extent possible, consistent with national security requirements;

7. All governments will take necessary steps to ensure that adequate liability protections from claims related to the cooperation will be provided for donor countries and their personnel and contractors;

8. Appropriate privileges and immunities will be provided for government donor representatives working on cooperation projects; and

9. Measures will be put in place to ensure effective protection of sensitive information and intellectual property.

From the outset, the G8 Global Partnership was quite plainly to be an ambitious undertaking – politically, geographically, strategically and technologically. Furthermore, targets were to be achieved within just ten years, drawing upon an equally ambitious budget of US$20 billion over the lifetime of the Partnership. At subsequent G8 summits (Evian, France, 2003; Sea Island, United States, 2004; Gleneagles, United Kingdom, 2005; St Petersburg, Russia, 2006) the scope, timetable and budgetary targets of the Kananaskis initiative were all reaffirmed.

Aim and Structure of this Report

The UK government had been contributing to work in this field for several years before the Kananaskis summit in 2002, and has been a leading participant in the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction since its inception. The aim of this report is to offer an independent, non-governmental review and evaluation of the UK's participation in the G8 Global Partnership (G8GP), in order to judge the efficiency and effectiveness of the UK G8GP programme to date, and to inform future policy on the allocation of resources.

This report is presented in four substantive sections:

• Section 2: Review of Strategy and Operations. Has UK G8GP strategy been clearly defined and has it been supported at the operational level?
• Section 3: Matching Resources to Strategy. How well do current funding priorities and projections support UK G8GP strategy?
• Section 4: Performance Assessment. An examination of UK G8GP performance against a mix of quantitative and qualitative indicators.
• Section 5: Future Priorities for the United Kingdom. Drawing upon Sections 2–4, how should UK policy be configured for the remainder of the Global Partnership?

Section 6 draws together overall conclusions regarding the United Kingdom's G8 Global Partnership policy and programme.

2 REVIEW OF STRATEGY AND OPERATIONS

Introduction

The UK government has a long history of productive involvement in cooperative threat reduction and G8 Global Partnership-style initiatives. Following the launch of the Nunn-Lugar Cooperative Threat Reduction (CTR) programme in 1991, during the 1990s the UK government funded a series of bilateral assistance projects with Central and East European countries and with countries of the Former Soviet Union (FSU). As multilateral projects developed during the same decade, under the auspices of either the IAEA, the G-7/8, the EC/EU or NATO for example, so the UK broadened its participation, contributing either financially or with expertise, or by assuming the responsibilities of multilateral project manager or leader.

The UK government's Spending Review in 2000, discussed at greater length below, enabled a more systematic and better-funded approach, particularly to work in the nuclear area. By early 2002, shortly before the G8 meeting at Kananaskis, the bulk of UK effort had been in the field of civil nuclear energy, rather than nuclear weapons (NW) or chemical weapons (CW), although the UK had funded or organized initiatives in these areas. On the nuclear side, the UK's principal concern was with reactor safety, materials accountancy and environmental issues. UK assistance concentrated on technical upgrades and advice, improvements in reactor operations and emergency procedures, enhancement of regulatory regimes, and pressure for the closure of the most dangerous reactors. The UK government elected early on to concentrate on specific bulk handling facilities such as Mayak in Russia and the ULBA Metallurgical plant in Kazakhstan, with a view to making the best of limited UK involvement, and building on particular UK safeguards expertise.[2] A particular feature of the UK government's approach during these years was the emphasis on establishing operator-to-operator contact between UK industry (e.g. British Nuclear Fuels Limited [BNFL]) and agencies (e.g. the United Kingdom Atomic Energy Authority [UKAEA]), and their FSU counterparts, in order to facilitate the transfer of knowledge and expertise. As far as nuclear weapons and weapon platforms were concerned, in the early/mid-1990s the UK made an indirect though important contribution to nuclear non-proliferation through the provision of secure containers and armoured transports to enable the return to Russia of nuclear weapons from Belarus, Kazakhstan and Ukraine, and in 2001 it announced its involvement in the decommissioning and dismantlement of obsolete Russian nuclear powered submarines. As far as the disposal of CW was concerned, the UK's involvement was minimal until the launch of a set of CW projects in July 2000.[3]

Much of the UK's work during the 1990s was already consistent with the goals later to be announced at the G8 Kananaskis summit in June 2002, and in several cases projects begun during the 1990s were not completed until after the start of the Kananaskis process. At the policy level, there was a sense of continuity between pre- and post-Kananaskis activity, and it seemed reasonable that various extant projects should be included under the new Global Partnership rubric. For all that, the Kananaskis agenda soon began to have a discernible influence on UK policy, prompting a shift in the direction of more security-related activity and assistance. In some cases, work which was not explicitly under the Kananaskis rubric (such as nuclear environmental work in cooperation with the Russian navy) nevertheless became grouped loosely under the UK's Global Partnership contribution. The result – as far as UK involvement is concerned – is a complex and varied policy area that on the one hand is well established and familiar, yet on the other is dynamic and expansive, offering new challenges for policy and implementation.

In the international literature, G8 Global Partnership and similar activity is generally discussed in terms of four categories: nuclear safety (i.e. the prevention of nuclear accidents, pollution and contamination); nuclear security (i.e. the physical security of sites and materials and the prevention of theft, sabotage and blackmail); non-proliferation (i.e. preventing the spread of chemical and nuclear weapons and weapon-relevant technologies and knowledge, including in the biological sphere); and environmental protection (the safe disposal of environmentally damaging equipment and facilities). In the UK experience, however, these categories have proved to be less than discrete, and the challenge to policy and practice has been to deal with often considerable overlaps between areas of activity. Thus, while the UK government has regarded the proper disposal and storage of spent nuclear fuel and radioactive waste material from decommissioned former Soviet nuclear powered submarines as a matter of both nuclear safety and nuclear security, there has also been an awareness of the obvious environmental benefits of such work.[4] Similarly, the controlled destruction of CW munitions has been regarded as a matter of urgent non-proliferation concern, yet this goal has been pursued with sensitivity to the environmental implications of such activity. In what has plainly been a complex undertaking, this section of the report asks what the strategy of the UK government has been, how clearly this strategy has been articulated, and how closely strategy has been matched by practical activity at the operational level.

United Kingdom G8 Global Partnership Strategy

As far as assistance with the management of Russia's Cold War nuclear legacy is concerned, after several years of activity UK policy was subjected to the discipline of the Cross-Departmental Review of Nuclear Safety in the Former Soviet Union (FSU), one part of the UK government's 2000 Spending Review conducted between December 1999 and July 2000. The Cross-Departmental Review, published almost two years before the G8 Summit at Kananaskis, set out various goals: participation in the rebuilding of the Chernobyl shelter; improvements in the operational safety of nuclear plant, regulatory systems and nuclear safety cultures across the FSU; de-fuelling disused submarines in Northwest Russia; dealing with surplus Russian weapons-grade plutonium; retraining and generating employment opportunities for Russian nuclear weapons scientists; and improving security, materials accountancy and international verification arrangements at FSU nuclear sites.[5] In the same Spending Review, the matter of 'chemical and biological weapons stocks and facilities' in FSU states was also acknowledged, and an annual additional budget of up to £4 million for three years, 2001–04, was allocated to the Ministry of Defence to address that challenge.[6]

Since the June 2002 Kananaskis summit, and guided by a UK government interdepartmental advisory committee, UK G8GP strategy has settled around the following four broad objectives:

1. To prevent sensitive nuclear materials and weapons expertise falling into the wrong hands;

2. To encourage FSU states to adopt Western standards of safety and regulation for their operating nuclear plant, and providing systems, training and expertise;

3. To assist with programmes to ensure the safety and security of spent nuclear fuel (SNF) in Northwest Russia and the associated environmental clean-up or decommissioning where the UK might otherwise be adversely affected (e.g. submarine decommissioning and onshore SNF storage sites such as Andreeva Bay in Northwest Russia) or where there is an important associated political or humanitarian imperative (as in the case of Chernobyl);

4. Assisting the Russian Federation to meet its obligations under the Chemical Weapons Convention (CWC).[7]

Expressed in these terms, the United Kingdom's G8GP strategy is clear and direct, and also easily communicable. Yet there is a degree of constructive ambiguity here, which has become a characteristic feature of UK participation in the G8GP. Thus, while the first objective draws upon the generally accepted view that the proliferation of nuclear weapons and expertise is to be prevented, the more contentious issue of who might own the 'wrong hands' is sensibly avoided.[8] And where the third objective refers to 'environmental clean-up', it becomes clear that this is not regarded as a priority activity for the United Kingdom, but as an indirect benefit associated with the pursuit of UK policy objectives, i.e. to ensure that the substantial quantities of SNF are secured safely and effectively. The UK government has all along sought to portray its involvement in the G8GP as a matter of national interest and national security, fairly traditionally defined, and has sought to avoid the impression that environmental clean-up is a central goal. The language is similarly nuanced in the second and fourth objectives. The goals themselves are unequivocal; 'Western standards' are to be adopted, and 'obligations' under the CWC are to be met. But the UK contribution is to 'encourage' and 'assist', reflecting the pragmatic view that, however urgent, solutions to these problems cannot be entirely donor-funded and externally driven, and must be pursued in partnership with the sovereign governments of the beneficiary countries, particularly Russia.

United Kingdom G8 Global Partnership Operations

In pursuit of the strategic objectives set out above, the UK government has funded a wide range of initiatives and projects. A detailed account of this work is provided by a series of UK government annual reports, available in hard copy and electronically.[9] For the purposes of this report, these activities can be organized and summarized under four headings:

- Nuclear Programmes;
- Redirection of Nuclear Weapon Scientists and Technicians;
- Destruction of Chemical Weapons and Biological Projects; and
- Environmental Programmes.

Nuclear Programmes

UK Nuclear Programmes have included various projects in **Northwest Russia**, **Threat Reduction** activities, and **Nuclear Safety** initiatives.

- In **Northwest Russia** the United Kingdom has sponsored and led the dismantlement of three decommissioned nuclear-powered submarines (two *Oscar* and one *Victor* class). Under the Global Partnership as a whole, by March 2006, a total of 197 nuclear-powered submarines of all classes had been decommissioned (in both Northwest Russia and the Pacific), some 133 had been completely dismantled, while 26 were in the process of being dismantled and 38 were awaiting dismantlement.[10]

  The United Kingdom has been heavily committed to ensuring the safe storage of spent nuclear fuel and radioactive waste at Andreeva Bay in Northwest Russia. Andreeva Bay is among the largest repositories of spent nuclear fuel from military-related sources in the world, with some 21,000 spent fuel assemblies (SFAs) from nuclear-powered submarines and other vessels, stored in three dry storage tanks. Many of the SFAs at Andreeva Bay – perhaps 65 per cent – are damaged in some way, making their handling very hazardous. As well as SFAs, the site also holds hundreds of tonnes of various types of solid radioactive waste (SRW) and liquid radioactive waste (LRW) at various levels of radioactive and chemical toxicity. In some cases, buildings and stores at Andreeva Bay are in such bad repair that it is difficult to know precisely what substance – or what mix of substances – is in a given pool or container.

At the Atomflot interim fuel storage facility in Murmansk, the United Kingdom's principal concern has been with the management and disposal of the contents of the MV *Lotta*, a nuclear fuel supply and service ship used to store SFAs from nuclear icebreakers and military submarines. The *Lotta* has capacity for some 5,440 SFAs, which has now been exceeded. The aim of the UK government is to assist in the extension/conversion of an existing shore-based storage facility at Atomflot (Building No. 5) and to provide 50 licensed and certified storage casks. This will make it possible to transfer the SFAs currently aboard the *Lotta* to secure storage ashore, thus freeing the *Lotta* for further service collecting and transporting SNF from Andreeva Bay and elsewhere. The UK has also undertaken a feasibility study to determine the case for UK funding of the construction of an SNF store at Mayak, which might be used to receive SNF from Andreeva Bay, Gremikha and other points around Northwest Russia.

In June 2003 the UK joined the United States, Russia and Norway as a partner in the Arctic Military Environmental Cooperation (AMEC) Programme. The prime objective of AMEC is to avoid repetition of the environmental and safety concerns which became apparent with the operation of the Russian submarine fleet during the Soviet era. Thus AMEC is concerned with nuclear security, safe operation of nuclear submarines and the management of hazardous waste.[11] AMEC is unique among G8GP and related activity in that it is the only programme directly to engage the Russian military.

• Threat Reduction refers to the physical security and protection of civil nuclear facilities. The UK has become involved in four related activities. First, as a contribution to the September 2000 US–Russia Plutonium Disposition Agreement, the United Kingdom has pledged £70 million to the collaborative effort. The timing and phasing of the UK contribution to the plutonium disposition effort will be decided once Russia and the United States have agreed a way forward. Second, the United Kingdom has pledged some £12 million (US$20 million) to the US-led Elimination of Weapons-Grade Plutonium Production Programme, to support the shutdown of a reactor in Zhelznogorsk, Siberia and the design and construction of a new fossil fuel power station at Sosnovoborsk, which is expected to be operational in 2011. Third, the United Kingdom has undertaken a range of projects intended to enhance the security and prevent the theft of nuclear and radioactive materials, working with Rosatom and other possible donors. Projects include improvements to fencing and lighting around key sites, the provision of CCTV and the training of guard commanders. Work is also under way and planned in non-Rosatom Russian institutes, and elsewhere in the FSU. Finally, the United Kingdom has contributed to preparations for the safe and irreversible decommissioning of the BN-350 fast breeder reactor at Aktau in Kazakhstan.

• Nuclear Safety initiatives are intended to improve safety in nuclear reactors and facilities through the provision of technical improvements, training, the transfer of expertise and some small-scale purchases of equipment. The main catalyst for nuclear safety work was the Chernobyl disaster in 1986, which remains the focus of much international attention. The goal of the Chernobyl Shelter Implementation Project – scheduled for completion in 2009 – is to reduce the likelihood and mitigate the consequences of a collapse of the temporary sarcophagus constructed over Chernobyl Unit 4 after the 1986 catastrophe. The project will involve construction of a vast new structure (known as the New Safe Confinement or NSC) over the old sarcophagus and reactor site, providing environmentally safe confinement of solid radioactive waste at Unit 4 for the next 100 years. As well as contributing to work at Chernobyl, the UK has also developed and implemented a Nuclear Safety Programme (NSP) since the mid-1990s. This has been a small-scale programme designed to promote internationally recognized nuclear safety and regulatory standards

within the civil nuclear industry of eight FSU/CEE countries: Armenia, Bulgaria, Lithuania, Romania, Russia, Slovakia, Slovenia and Ukraine. By 2006, as the result of a realignment of UK policy priorities and a shift within the G8 Global Partnership in favour of nuclear security-related work, the United Kingdom's NSP had begun winding down, and it will in future be run alongside nuclear security work.[12]

Redirection of nuclear weapon scientists and technicians

The United Kingdom has been a long-standing contributor to international efforts to prevent the haemorrhaging of nuclear weapons expertise from the ten 'closed cities' (or 'ZATOs') of the Former Soviet Union. The cities had been constructed solely for the development of the Soviet weapons programme. The United Kingdom has helped to find alternative work for weapons scientists and technicians, and to stabilize the social and economic conditions of the cities concerned. By the late 1980s, the closed cities employed approximately 150,000 people, among them some 20,000 'proliferation sensitive' nuclear weapon scientists, engineers and technicians and others who worked either on non-nuclear defence-related matters or on civil nuclear energy-related matters within the cities.[13] The prospect that even a handful of these scientists and technicians might take their skills and knowledge abroad in search of gainful employment, or be recruited into a nuclear proliferation network such as that run by A.Q. Khan, has filled G8 government officials and international security analysts with alarm.

Through the UK–Russia Closed Nuclear Cities Partnership (CNCP), the UK is committed to the development of commercially viable and durable alternative livelihood opportunities in the cities. The CNCP was launched in 2003 and is involved in six of the ten closed cities. In 2004 its remit was broadened to include the various nuclear institutes in Ukraine, Kazakhstan and Uzbekistan. The central task of the CNCP is to keep the cities functioning as viable communities by generating local employment and prospects for scientists and technicians. The United Kingdom has taken a distinctly commercial, market-oriented and business development approach, unlike other ventures which have tended to concentrate more on preserving scientific research for its own sake. The CNCP seeks a balanced portfolio between conventional manufacturing and services projects on the one hand, and high-technology, innovation-based projects on the other. The CNCP portfolio includes a range of small and medium-sized projects typically running for two years with an average CNCP investment of £200,000 in total. By late 2005 some 22 projects were under way, with a further 19 in preparation, and by the end of the financial year 2005–06 CNCP programme managers aimed to have implemented 50 commercialization and investment projects in the closed cities.[14] These projects currently under way are expected to create over one thousand jobs for former weapons scientists and engineers.

The United Kingdom also contributes financial support indirectly, via the European Union, to related work being undertaken by the International Science and Technology Centre (ISTC) in Moscow and the Science and Technology Centre Ukraine (STCU), based in Kiev. The primary objectives of the ISTC are to 'provide Russian and CIS former weapons scientists, particularly those with knowledge and skills related to weapons of mass destruction and their delivery systems, opportunities to redirect their talents to peaceful opportunities' and, second, to 'encourage the integration of Russian and CIS former weapons scientists into the international scientific community.'[15] A number of CNCP grant projects are also implemented through the ISTC. The STCU offers another route to achieving the redirection and re-employment of nuclear weapon scientists and technicians, by which the United Kingdom can develop some of its closed city and institutions activity multilaterally, rather than bilaterally.

Destruction of chemical weapons and biological projects

The disposal of Russia's chemical weapon stockpile is one of the four priorities of the G8 Global Partnership, as agreed at the Kananaskis summit in June 2002. As with other projects under the Global Partnership, the UK's involvement in this work – principally concerned with the construction of a chemical weapons destruction facility – predates the Kananaskis summit, as does the UK's rather more tentative interest in the safety and security of bio-scientific research in the FSU.

• Destruction of chemical weapons. Russia's Cold War chemical weapons (CW) legacy was a declared stockpile of 40,000 tonnes of CW, contained in over 4 million artillery, rocket and air-delivered munitions and other containers. The warheads and munitions were stored in seven arsenals dotted around Russia. As a state party to the 1993 Chemical Weapons Convention, which it ratified in November 1997, Russia was obliged to destroy its CW stocks within ten years of the CWC's entry into force (i.e. by April 2007). Russia and the United States have subsequently requested that their destruction deadline be extended to April 2012,[16] but in both cases the complete destruction of CW stocks may not be achieved until later (the US has indicated much later). The United Kingdom has three CW-related activities in Russia and beyond: support to Chemical Weapons Destruction; Redirection of Chemical Weapons Scientists; and support to Green Cross (see below).

The priority of the UK government has been to assist in the completion of the Shchuch'ye Chemical Weapons Destruction Facility (CWDF) in order for the facility to be operational as soon as practicable, currently expected to be by mid-2008, according to an agreement reached by Russia and the United States. The CWDF will be close to a CW storage site holding some 1.9 million artillery and rocket munitions containing approximately 5,500 tonnes of the nerve agents sarin, soman and VX. When complete Shchuch'ye will be capable of destroying 1,700 tonnes of chemical agents per year.

An important feature of the UK government's work at Shchuch'ye is that, as well as making direct contributions to the development of the CWDF, the UK has also encouraged other donor governments and international organizations (e.g. the EU) to contribute to the completion of the CWDF in time for the start of operations in mid-2008. The UK has signed memoranda of understanding or made other arrangements with Belgium, Canada (the UK's principal collaborator), the Czech Republic, the European Union, Ireland, the Netherlands, New Zealand, Norway and Sweden. These so-called 'piggy-backing' arrangements mean that the UK has been able to broaden the international effort and has helped to bring a further £48.5m of support to the work at Shchuch'ye.[17]

The rationale for the Russia–UK Closed Nuclear Cities Partnership applies equally well to science and technology in the field of chemical weapons, albeit on a lesser scale. The UK government has sponsored a number of projects intended to ensure the non-proliferation of CW expertise by the movement of former chemical weapons scientists and technicians. UK-sponsored projects in the Russian Federation, the CIS and beyond have included the methodology for risk assessments at CW destruction sites, a workshop to assess the contamination of land, and engagement with Iraqi scientists and engineers to help them find appropriate civilian employment.

The United Kingdom also supports the Green Cross initiative founded in 1993 by Mikhail Gorbachev. Green Cross is intended to encourage dialogue and debate on environmental matters, with a strong focus on CW destruction in Russia. Since 2003, the UK MoD has contributed to the annual 'National Dialogue Forum' in Moscow. The forum is attended by

Russian officials from central government and from each of the regions in which CW storage sites are located, and by those Global Partnership donor governments involved in the destruction of Russian CW. The UK MoD also supports the Green Cross Public Outreach Office in Kizner, one of Russia's seven CW storage sites.

• **Biological projects.** The prospect that a terrorist group might acquire and use biological weapons (BW) is especially serious. According to many analysts this is also a prospect about which too little is understood and too little has been done. By one US estimate, the Soviet offensive BW programme was vast, with some 60,000 employees at 50 sites.[18] Progress on improving security at former BW sites and at sites holding dangerous pathogens, and on redirecting former BW weapon scientists, has been slow, however, 'because of lack of Russian transparency and site access, especially to military-related sites'.[19] This is a controversial issue, not least because the notion that 'there are biological threats emanating from Russian territory' is 'an allegation that is unacceptable for Russia'.[20] Accordingly, the United Kingdom and other G8GP members have sought to identify areas of collaboration which would contribute to the overall goal while being acceptable to the Russian government and the governments of other FSU states. With this in mind, the UK government has undertaken a range of 'Biological Redirection Projects' in Georgia, including a review of research on bacteriophage at the G. Eliava Institute and an assessment of the Institute's capacity to detect, treat and decontaminate anthrax use.

Environmental programmes

Although not a priority in UK policy, the protection and restoration of the natural environment has been a long-standing feature of UK work under the G8GP, and previously during the 1990s. As well as contributing to the AMEC initiative, the United Kingdom is a participant in the Northern Dimension Environmental Programme (NDEP). The NDEP was formed in 2001 and focuses on the management and storage of nuclear waste in Northwest Russia, particularly on the Kola Peninsula. Major NDEP projects include the creation of safe SNF unloading and storage facilities for *Alfa* class submarines, a study of the feasibility of moving SNF and SRW from open storage sites, the improvement of existing SNF storage facilities and physical protection at Gremikha, and work on radiation monitoring and an emergency response system for the Murmansk region.[21]

Summary: Section 2

This review of UK G8 Global Partnership strategy and operations prompts a number of observations. First, before and since the Kananaskis Summit in June 2002 the UK government has presented its strategic goals clearly and in an easily communicable manner. Second, the United Kingdom has set its strategic goals in terms of the effects that it might reasonably expect to achieve, rather than in terms of the proliferation problem as a whole. Thus, while the UK government is very likely to be concerned that weapons and technologies might find their way into the 'wrong hands' of state and non-state proliferators, within the G8GP the UK's focus has been on practical, incremental steps rather than on the pursuit of an overarching solution to the challenge of international proliferation.

The third observation concerns the UK's relations with Russia. The United Kingdom has maintained its commitment to existing projects, such as the Chernobyl Shelter Implementation Project in Ukraine, or undertaken new projects such as those in Libya and Iraq, which go beyond Russia's priorities for dismantlement of its nuclear-powered submarines and destruction of its chemical weapons. Yet throughout the course of the Kananaskis project the United Kingdom has been especially understanding of the Russian perspective, as a sovereign government receiving international assistance in various sensitive areas of national security and industrial policy. To an extent, the United Kingdom's approach is a device with which to limit its own involvement and liability; hence the carefully phrased language of 'encouragement' and 'assistance' to the Russian government. The United Kingdom seems reluctant, in other words, to position itself as the single answer to Russia's problems. But what is also at work here is a pragmatic acceptance of the fact that, like other G8GP donor governments, the UK can only work in geographical and functional areas where legal agreements have been drawn up, covering liability, tax exemption and access to project sites. Without such agreements, it would be impossible, or at least very unwise, to initiate complex and expensive G8GP projects. Given that, in the nuclear field, the United Kingdom's only agreement is with Russia, the influences on UK policy and activity are understandable.

Finally, the relationship between strategic goals and operational activity is as close as could be expected. Each of the four 'broad objectives' cited earlier is supported by a range of projects and initiatives. In other words, there are no obvious gaps in the strategic/operational relationship. The UK approach is also tolerant of overlaps between activity areas, making a virtue of flexibility and adaptability in the face of complex and interwoven challenges. There is, however, a minor discrepancy when strategic goals are viewed through the prism of operational activity, rather than vice versa. Even though it is a small commitment in financial terms, and while acknowledging the sensitivities of the Russian government, the United Kingdom's work in the biological area seems oddly understated at the level of declared policy. Many analysts of CBRN proliferation regard biological weapons as an extremely potent and all too available weapon of mass destruction. There is a case, therefore, for giving this issue more prominence in UK G8GP policy statements.

3 MATCHING RESOURCES TO STRATEGY

Introduction

At the Kananaskis summit in June 2002, G8 leaders set a target of US$20 billion to fund the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction over a period of ten years. The United States pledged US$10 billion, with the remaining $10 billion to be raised by the remaining G8 members and other donor countries. The United Kingdom's pledge, made by Prime Minister Tony Blair at Kananaskis, was for up to US$750 million over ten years – some 3.75% of the total being sought.[22]

This section asks three questions concerning UK G8GP budgeting and expenditure. First, how have UK funds been committed since Kananaskis? Second, how closely does UK G8GP expenditure match the strategic goals set out in the previous section? And finally, at projected rates of expenditure will the United Kingdom be able to sustain its broad portfolio of activity for the life of the Global Partnership until 2012?

United Kingdom G8 Global Partnership Budget

The United Kingdom's Kananaskis pledge of 'up to US$750 million' reflected budgetary parameters which had largely already been set. The HM Treasury Spending Review 2000 had allocated a sum of £84 million to the DTI over the three years from April 2001 for the Former Soviet Union Nuclear Legacy Programme. This would be a ring-fenced budget, meaning that the funding could not be used by the DTI for other programmes. Furthermore, with 'end year flexibility' (EYF) the DTI was in a position to carry forward and draw down unspent funds from previous years. This financial flexibility has proved to be a valuable feature of the UK's G8GP programme, particularly given the time taken to establish the necessary legal agreements and to implement technically and managerially complex projects. Both the UK and its co-donor governments have emphasized the need for comprehensive planning to ensure that public funds are well spent and projects well implemented. On a number of occasions this thoroughness meant that the negotiation of access and liability agreements, and commercial contracts, took years rather than months, causing considerable delays between the initial pledge and planned expenditure. Without EYF it would not have been possible to carry a budgeted sum forward, and there might have been pressure to spend sums hastily, before a satisfactory legal and commercial framework had been established, rather than simply risk losing the unspent funds. As well as the budgeted £32.5 million per annum, the UK has pledged a sum of £70 million as a contribution to the US–Russia Plutonium Disposition Agreement, a project which has yet to begin but which could last for as long as 17 years at an overall cost of some $2 billion, depending on which technical option Russia agrees to pursue. The UK's contribution to Plutonium Disposition would be found from its future Global Partnership budget.

The UK budget for chemical and biological projects was also set in the Spending Review 2000, with £4 million to be added annually to the budget of the Ministry of Defence (MoD) for these purposes. This commitment forms part of the UK's agreement in principle to provide up to US$100 million for the destruction of Russian chemical weapon stocks. With this agreement in mind, and given that the MoD does not enjoy end-year flexibility in its G8GP budgeting and expenditure, arrangements have been made to transfer additional funds to the MoD from the DTI-managed G8GP account. In 2005–06 some £405,000 was transferred in this way, and the DTI has agreed to transfer a total of £8 million of unspent nuclear assistance funding for chemical

weapons destruction projects. The MoD is expected to spend most of this in 2007–08. In headline terms, the United Kingdom's budgeted commitment to the Global Partnership could therefore amount to as much as £325 million (£32.5 million per annum for ten years assuming future Spending Rounds enable a baseline budget to be maintained) for the FSU Nuclear Legacy Programme. This is equivalent to some US$620 million at December 2006 exchange rates of $1.92. These figures do not, of course, offer a definitive guide to UK G8GP budgeting and expenditure: the £32.5 million annual budget for the Nuclear Legacy Programme could not be fully spent at the outset of the Kananaskis process since the Agreement with the Russian Federation was not in place and a good deal of project negotiation was required before work could start on major projects. While a pledge of £70 million for Plutonium Disposition was made by the Prime Minister at the G8 summit in Okinawa in 2000, the cost of funding this work when it eventually takes place will be found from within the FSU Programme budget, with contributions spread over a number of years.

United Kingdom G8 Global Partnership Expenditure

Table 1 shows the main lines of UK G8GP expenditure since 2002. The distribution of resources broadly matches the UK's strategic priorities: nuclear security, nuclear safety, nuclear clean-up and decommissioning in Northwest Russia, and chemical weapons disposal. From 2006, following a shift within the G8GP in favour of nuclear security-related work, budgeting for the UK Nuclear Safety Programme will steadily decrease as nuclear safety activities are included within nuclear security projects. Recent and forecast expenditure on the Closed Nuclear Cities Partnership is consistent with the overall CNCP budget of £35 million over eight years from 2002 to 2010.[23] Projects in Northwest Russia – primarily submarine dismantlement and SNF storage, and including environmental projects (AMEC and NDEP) – represent by far the largest item of UK expenditure, reflecting the complexity of the challenges being confronted there. Expenditure on chemical and biological projects is consistent with the budgetary allocation made in 2000. Finally, Table 1 also indicates that the UK has committed funds to G8GP projects which fall within the UK scope of interest but which are led by other governments or organizations: the US–Russia Plutonium Disposition Agreement; the US-led Elimination of Weapons-Grade Plutonium Production Programme (the UK contribution to the closure of the Zheleznogorsk reactor); the IAEA-led decommissioning of the reactor in Aktau, Kazakhstan; the multilateral Chernobyl Shelter Implementation Project; and the EBRD-managed Northern Dimension Environmental Programme.

These headline expenditure figures reflect implementation costs but do not include often considerable sunk costs, such as direct contributions in kind by UK government departments, and the high level of expertise contributed by the many agencies and organizations involved in the UK effort.

Table 1: United Kingdom G8 Global Partnership main expenditure (£m)[1]

Programme Area	2001-02 Outturn	2002-03 Outturn	2003-04 Outturn	2004-05 Outturn	2005-06 Outturn	2006-07 Forecast
Chernobyl Shelter Project	7.88	4.04	14.13	0.16	0.072	0.00
Plutonium Disposition in Russia [2]	0.00	0.00	0.00	0.01	0.00	0.00
Nuclear Materials Accountancy	0.04	0.01	0.00	0.03	0.00	0.00
International Verification of Excess Weapons Material[3]	0.00	0.00	0.00	0.00	0.00	0.00
Nuclear Safety Programme	1.84	2.59	1.98	5.61	5.86	3.40
Physical Protection of Proliferation-Sensitive Nuclear Materials	0.29	0.63	0.58	0.64	0.96	4.00
Decommissioning in CEE/FSU	2.86	0.00	5.00	0.00	0.00	0.00
Closed Nuclear Cities Partnership	0.00	0.70	1.96	4.10	3.97	5.00
NW Russia[4]	0.08	0.64	16.52	20.10	19.45	15.00
KEDO[5]	2.04	2.40	0.00	0.00	0.00	0.00
Support for IAEA Decommissioning BN350 Reactor, Aktau, Kazakhstan	0.00	0.11	0.47	0.73	1.56	1.25
Social and Economic Consequences of Nuclear Power Plant Closure	0.13	0.30	1.11	1.23	0.86	0.50
Information Dissemination and Programme Publicity	0.00	0.05	0.05	0.02	0.04	0.05
Plutonium Reactor Closure Project[6]	0.00	0.00	0.00	2.55	5.89	2.50
Sub-total: DTI/nuclear (£m)	**15.16**	**11.47**	**41.8**	**35.18**	**38.67**	**31.70**
Chemical and Biological Programmes (MoD)	0.11	2.7	2.92	4.61	4.46	4.00[7]
Total (£m)	**15.27**	**14.17**	**44.72**	**39.79**	**43.13**	**35.7**

***Sources*: UK Government, *The Global Partnership: Progress During 2005*, pp. 30–31; draft report 2006.**

Notes:

(1) *Excluding* staff costs of the DTI team directing implementation of Global Partnership projects (£725,000 for 2006-07), but *including* costs of project consultants (HTSPE, BNG, RWE Nukem Ltd and Crown Agents) and costs of locally engaged members of staff in the British Embassy, Moscow and the British Consulate General, St Petersburg.

(2) The DTI has ring-fenced £70m for plutonium disposition work. It is not clear, however, how long these funds will remain reserved in this way.

(3) Expenditure on plutonium disposition and related work on International Verification of Excess Weapons Material depends on completion of agreement between Russian Federation and United States.

(4) Includes £10 million contribution to the EBRD-managed Northern Dimension Environmental Programme in 2003–04.

(5) UK contribution to the Korean Peninsula Energy Development Organization (KEDO).

(6) UK contribution to a US-led project leading to the safe and irreversible shutdown of two plutonium-producing reactors in Seversk and Zheleznogorsk.

(7) Chemical and Biological Programmes are administered by the MoD under a separate budget. A further £8 million of unspent nuclear assistance funding is to be transferred from the DTI to the MoD for assistance with CW Destruction. The MoD expects to spend most of this sum on projects at Shchuch'ye in 2007–08. MoD outturn and forecast figures *include* staff costs and costs associated with managing chemical and biological projects.

United Kingdom G8 Global Partnership Budget: Outlook to 2012

Public finances are never set in stone; unexpected charges can occur which require a reassessment of government spending plans where there are many competing priorities. As the UK government approaches its Comprehensive Spending Review 2007, where all budgets have to be fully justified rather than expecting to proceed with delta increases, it would be prudent to acknowledge that in matters of government expenditure 'ring-fenced' is to some extent a relative term and largely designed to protect the budget from other departmental priorities where Global Partnership work might not been seen as 'core business'. Yet for all that, the United Kingdom's G8GP pledge of up to US$750 million was made at a G8 summit – one of the world's most significant diplomatic and economic meetings. The prestige and influence associated with participation in, and commitment to, G8 activities are not likely to be discarded lightly by the UK government. Furthermore, given that UK investment in the G8GP has had a multiplier effect, encouraging G8 and partner countries to make and deliver on their own pledges to the overall effort, the costs to the Global Partnership as a whole of possible UK retrenchment could be disproportionate to any savings made at the UK national level.

As currently configured, the baseline budget for nuclear legacy-related activities should ensure that key programme areas will be sustained and will deliver what is expected of them for the remainder of the Global Partnership. This is, of course, a rather self-evident observation since efforts will have been made by UK officials to ensure that UK budget, activity and expectations are all as closely matched as possible. In some cases, programme areas will be wound up before the end of the Global Partnership. Work on the Social and Economic Consequences of Nuclear Power Plant Closure, budgeted at just £500,000 for 2006–07, should come to an end in 2007, while the final project in the UK Nuclear Safety Programme will be completed in 2008. Thereafter, as noted earlier, NSP-related funding will be transferred to nuclear security and threat reduction activities. The effect on the UK G8GP budget of these exit strategies is not likely to be dramatic. Other programme areas, such as nuclear security work, and activities in Northwest Russia, are expected to continue for the remainder of the Global Partnership and have been budgeted appropriately. Much the same could be said for the MoD's management of chemical and biological projects. The annual budget of £4 million (supplemented by £8 million transferred from the DTI) has been allocated to a range of carefully planned and managed projects. Since UK contracts have been awarded on a firm price basis there are, once again, unlikely to be major planning or price shocks during the remainder of the Global Partnership.

Although the Global Partnership is currently assumed to come to a formal end in June 2012, it is not likely that activities sponsored by the United Kingdom (and, indeed, by other governments) will simply be guillotined at that point. It is of course open to the G8 to agree to continue the Global Partnership work beyond 2012 if the results of the ten-year programme indicate that continuation would be worthwhile to enhance global security. Programmes and activities still under way in June 2012 will instead either enter a period of controlled run-down or be continued under another arrangement if in line with UK policy priorities, during which budgeted funds will be spent. The end of the Global Partnership is unlikely, therefore, to be seen as an opportunity to make savings through unspent funds. The two main uncertainties in UK G8GP budgeting are the Chernobyl Shelter Implementation Project and the Plutonium Disposition Agreement.

Following the 1986 disaster, large quantities of radioactive material were released into the atmosphere and some of it – mainly the radioisotope caesium-137 – fell on upland sheep

farming areas in the United Kingdom. By 2006 there were still almost 400 sheep farms, the majority in Wales, under close monitoring and restrictions. Having been affected so directly, the United Kingdom has become a leading stakeholder in the Chernobyl project, committing large sums to the Chernobyl Shelter Fund and to related activities: US$16.82 million to the Chernobyl Shelter Fund in 1997; US$18.32 million in 2000; £10 million in 2004; and a further £5 million to the EBRD-managed Nuclear Safety Account for work on radioactive waste at the site.[24] Work on the New Safe Confinement at Chernobyl was intended to be completed by 2009, at a cost of more than US$1 billion. This is, however, a vast and complicated multinational engineering and environmental project, the organization of which has not proceeded smoothly or on schedule. Although the United Kingdom does not, of course, have an open-ended liability for the success of the Chernobyl project, this is nevertheless an initiative in which the UK government has made a considerable financial and political investment. There is thus some chance – however small – that the United Kingdom might come under pressure to increase its investment if the budget for the evolving Chernobyl project is revised upwards, with consequent implications for the UK G8GP spending plans.

As for the US–Russia Plutonium Disposition Agreement, here £70 million has been set aside within the overall UK G8GP budget, with contributions expected to be spread over a number of years when this major international project is eventually implemented. No budget should be distorted by a decision to spend an allotted sum and the DTI plans to profile its contribution to ensure other priority work can be completed successfully. But in this case, no such spending decision is in prospect since it seems most unlikely that the Plutonium Disposition Agreement will come to fruition before the end of the Global Partnership – if indeed the Kananaskis process does end in 2012.

Summary: Section 3

Section 3 shows how UK G8GP funds have been budgeted and allocated to the DTI and the MoD respectively. A key point to note is that the UK pledge at Kananaskis was for 'up to' US$750 million, with 'up to' US$100 million of that total subsequently set aside for chemical projects. In both cases, the UK pledge is a ceiling and it has remained for the government to decide how much of the pledged figures is to be spent, on which projects, where and at what pace. The United Kingdom has supported a wide range of Global Partnership activities, but expenditure patterns show that priority has been accorded to the UK strategic goals of nuclear security, nuclear safety (now running down), nuclear clean-up and decommissioning in Northwest Russia, and chemical weapons disposal. Resources and strategy are closely matched, in other words. Public spending plans can change, but there are at present no obvious reasons to suppose that the UK G8GP budget will not be able to support planned projects and activities up to 2012, and for a period beyond.

A *leitmotif* in UK support to Global Partnership projects is that pledged funds, whatever the amount, are not spent without the necessary political, legal and commercial agreements being in place. The provisional allocation of £70 million to the much-delayed US–Russia Plutonium Disposition Agreement is a good example of the UK's prudent approach to G8GP spending. The UK commitment to the Global Partnership is careful and measured, and might usefully be described as strategy-led, rather than expenditure-driven. In some cases, the fulfilment of UK strategic goals might be delayed for months if not years while satisfactory agreements are reached. Within the parameters of the Kananaskis pledge, a flexible approach to budgeting and expenditure will therefore remain an essential feature of the United Kingdom's involvement in the Global Partnership.

4 PERFORMANCE ASSESSMENT

Introduction

There are no standard criteria against which to evaluate any one government's performance in the Global Partnership. Without such criteria, while the value of a government's contribution to the G8GP can certainly be measured in absolute terms, considering either inputs (e.g. expenditure) or outputs (e.g. the number of weapons destroyed, scientists re-employed or spent fuel assemblies safely stored), it is difficult to gauge the relative worth of that contribution. There can therefore be no externally valid answer to the question 'How effective is a given country's contribution to the Global Partnership?'. This difficulty arises because as an exercise in multilateral diplomacy and assistance the Global Partnership is largely unprecedented in scale and scope. Furthermore, the tasks being undertaken within the Global Partnership are themselves *sui generis*, making comparative cost/benefit calculations difficult. How much should it cost to dismantle safely an *Oscar* class submarine? Should the dismantlement of a *Victor* class submarine cost more, or less? Is one dismantled submarine worth the equivalent of one thousand destroyed chemical munitions? Is a re-employed weapons scientist 'worth' as much as ten securely stored spent fuel assemblies? Utility calculations produced in response to these questions would be bizarre, to say the least.

Global Partnership donor governments also have different objectives and priorities; one government may be more interested in environmental clean-up, another in the destruction of chemical weapon stores, and another in preventing knowledge-based proliferation through the movement of disaffected, unpaid scientists. In other words, while the Global Partnership is a means to an end, there appear to be several equally valid ends on offer. What is more, the goals set out at Kananaskis are so general as to be too remote to validate activities currently in progress. Thus, while donor governments might (and presumably do) calculate that the cost of a given activity is offset by the benefit of undertaking it (or, perhaps, by avoiding the penalty of not doing so), it is difficult to know how many years should be allowed for that calculation to run – ten, twenty, fifty or one thousand? How certain is it possible to be that an SNF storage system will function adequately in 100 years' time, preventing security breaches and environmental pollution, and that the cost/benefit calculus will be advantageous? Furthermore, donor governments are also confronted by the problem that the rationale for their participation in the Global Partnership is largely one of deterrence, of raising the threshold for acquisition and use of certain materials and weapons. But what makes deterrence work? In other words, the 'evidence' being sought to prove the wisdom and foresight of Global Partnership policy is that of a non-event, the proof of which is logically impossible to establish. At what point, after all, could it be said with analytical confidence that the various Global Partnership initiatives have ensured the non-proliferation of nuclear, chemical and biological weapons, or prevented terrorist acquisition of such weapons?

In spite of these reservations, performance assessment cannot reasonably be avoided; the scale of public expenditure on the Global Partnership, together with the urgency and complexity of the tasks being undertaken, requires that a government's contribution to the G8GP be scrutinized as closely and intelligently as is feasible. In the absence of standard measuring tools a reasonably accurate evaluation of the United Kingdom's contribution to the Global Partnership can nevertheless be drawn, using performance indicators.

Performance Indicators

An overall assessment of the value of the UK contribution to the G8GP can be compiled from a range of quantitative and qualitative performance indicators:

- **Policy Consistency;**
- **Operational Efficiency;**
- **Comparative Pledge/Expenditure Ratios;**
- **Comparative Outputs; and**
- **Multiplier Effect.**

Each of these performance indicators is discussed in detail below.

• Policy Consistency. The most straightforward indicator of performance is that which gauges expenditure and activity against declared intent. As Sections 2 and 3 of this report have shown, the UK government has set out its strategic goals for the Global Partnership, has translated those goals into a wide range of projects at the operational level, and has matched resources to its strategy and projects. With a good match between strategy, operations and resources, it could reasonably be argued that UK policy is internally consistent. Yet the strategy/operations/resources match is easier to judge in some areas than in others. Thus, while there were, and perhaps still are, some uncertainties surrounding the dismantlement of nuclear-powered submarines, this is a discrete and finite activity, the benefit of which appears to be self-evident. Something similar could be said for the destruction of chemical weapons. In these cases, the relationship between intent, expenditure and outcome is readily apparent. In the case of the re-employment of weapons scientists, however, policy consistency is more difficult to establish, principally because the policy itself is more open-ended. How wide should the catchment area be; should it include just scientists and engineers, or should laboratory technicians and even some ancillary staff be included? More importantly, where there is a risk that failure with just one scientist could have grave consequences for non-proliferation, how many re-employed weapons personnel constitute successful policy on the part of the United Kingdom? There might be plenty of activity, but in a more open-ended undertaking such as scientist redirection/re-employment, it is more difficult to ascertain the benefits of the activity; more difficult, in other words, to establish a consistent link between policy, investment and return.

• Operational Efficiency. As a performance indicator, efficiency refers to the proportion of UK Global Partnership expenditure which is consumed in overheads such as staff and running costs. Calculation of the UK overhead rate is not an exact science, although an informed approximation can be made. The DTI's forecast expenditure for 2006–07 covers certain overheads, namely contractor costs (HTSPE, BNG, RWE Nukem and Crown Agents) and the costs of locally engaged staff in Moscow and St Petersburg. The scale of these overheads is not itemized in the published budget. Not covered at all in the forecast expenditure are the staff costs of the DTI team directing the programme, assessed as £725,000 for 2006–07. If this sum is added to the DTI forecast expenditure of £31.725 million, then DTI staff costs amount to an overhead of approximately 22.3 per cent. The Ministry of Defence budget for 2006–07 does include project management and support costs for 'a small programme/project management team', including staff costs, travel and subsistence requirements and translation fees. These figures suggest an overhead rate of 17–18 per cent. In some cases, the MoD also covers the overhead of other donors.

To calculate the overall UK G8GP overhead rate, contractor and locally engaged staff costs would also have to be included, as would those of other non-DTI officials involved in DTI-led

Global Partnership work, such as FCO officials. There is also an argument that the sunk costs of project management and engineering expertise should be included in the overhead calculation, rather than being considered a free good. Taken together, these various costs could combine in a governmental overhead rate somewhere between 17 per cent and 25 per cent. Commercial overhead rates are still more difficult to ascertain or calculate, for reasons of commercial confidentiality. One contractor consulted during the course of this review suggested an overhead rate (defined as 'management costs') of about 5 per cent of the total budget for the project in which it was involved. This seems likely, however, to be a conservative estimate. Although management costs will vary considerably in terms of the scale and complexity of the project being undertaken, if all costs associated with project monitoring, risk mitigation and technical advice (which, for some projects, can be a significant proportion of the overall sum, particularly in the nuclear sector) are taken into account, then the overhead rate for commercial sector involvement in UK Global Partnership projects is more likely to be between 10 and 25 per cent.

In the United Kingdom, a government overhead rate of up to 25 per cent compares very favourably with the UK Research Council's maximum permitted overhead of 46 per cent. Similarly, for the commercial sector, an overhead rate of between 10 and 25 per cent would appear to be lean and competitive. It is difficult, however, to establish how these UK overhead estimates might compare to other Global Partnership donors, since overhead rates across the G8GP have not been published. There is, therefore, as yet no standard or average Global Partnership overhead rate against which to judge the financial efficiency of the United Kingdom's performance overall.

It should be noted, finally, that 'efficiency' and 'value for money' are ideas which are themselves open to interpretation. In the conventional understanding of the term, as used above, financial efficiency requires overhead to be the smallest possible proportion of overall expenditure. But from another perspective, value for money can mean something rather different. In Russia, the United Kingdom's emphasis has been on grant aid – i.e. financial investment in local projects. This differs from other approaches, which might concentrate on providing expertise rather than financial investment, and is especially welcomed in Russia: 'For Russia, it has been very important that 80% of the funds allocated by the United Kingdom are being spent in Russia itself.'[25] What should also be borne in mind is that the costs of managing large-scale construction and engineering projects in very remote areas, in ways that achieve the desired result and avoid misuse of funds, can be a significant additional financial burden. Yet these costs might not be avoidable if the project is to succeed and if public money is to be well spent overall.

• **Comparative Pledge/Expenditure Ratios**. The relationship between pledges made to the Global Partnership and actual expenditure is closely monitored. Promises are easy to make, but can often be little more than diplomatic expressions of intent. Real expenditure of public money, however, will usually not be made without a good prospect of success. The rate of expenditure has therefore come to be indicative of donors' faith in the merits and potential of the Global Partnership. With the Global Partnership coming to an end in 2012, the rate of expenditure is also a key indicator of the level of achievement to be expected by the end of the Kananaskis process.

For the United Kingdom, the rate of spending suggests that government does indeed have faith in the Global Partnership. Approaching the halfway point in the ten-year programme, the UK's expenditure rate is healthy. Taking compounded annual outturn from 2002–06, and adding forecast expenditure for 2006–07, UK expenditure should be in the region of £175 million by the

time the mid-point of the Global Partnership is reached in 2007. Using year-average sterling/dollar exchange rates for each of the first four financial years of the Global Partnership,[26] and multiplying forecast expenditure for 2006–07 by the early December 2006 exchange rate of UK£1.00 to US$1.92, UK G8GP expenditure at the halfway point will be equivalent to approximately US$314 million, or some 42 per cent of the pledged total of up to US$750 million. This is, once again, indicative of a well-paced and cautious spending plan, and one where for contractual reasons the bulk of expenditure is in any case expected to take place in the later years of the programme.

The UK's spending rate compares very favourably with performance across the G8 Global Partnership as a whole. By July 2006, after four years of the Global Partnership, some US$17.5 billion of the Kananaskis goal of US$20 billion had been pledged, and of that sum only US$3.5 billion had actually been spent, or 20 per cent of the total pledged.[27] By comparison, the UK pledge/expenditure ratio at the four-year point was approximately 34 per cent of the total of up to US$750 million.

• **Comparative Outputs.** The United Kingdom was described earlier as a 3.75 per cent shareholder in the Global Partnership venture. One crude indicator of comparative performance would therefore be to ascertain whether the United Kingdom's achievements to date have been consistent with this level of commitment, in the UK's priority areas of submarine dismantlement, SNF storage, chemical weapons destruction and scientist redirection.

By March 2006, a total of 197 former Soviet nuclear-powered submarines of all classes had been decommissioned (in both Northwest Russia and the Pacific), some 133 had been completely dismantled, 26 were in the process of being dismantled and 38 were awaiting dismantlement.[28] Of the 133 dismantled submarines, the UK had been responsible for the dismantlement of two *Oscar I* class submarines (hulls 605 and 606) and one *Victor* class (hull 296) – a performance slightly lower than might be expected when set against the UK's overall level of investment in the Global Partnership, but entirely respectable when set against the number of submarine dismantlements undertaken by non-Russian governments. The costs of the documentation and infrastructure work should also be included in an assessment of the UK effort. The parallel Norwegian-led dismantlement of *Victor* 297 – to some extent facilitated by UK efforts – should also be borne in mind, as should the planned collaboration between the United Kingdom and Norway to dismantle one further *Victor* hull.

The United Kingdom's contribution to the safe handling and storage of SNF in Andreeva Bay and at Atomflot in Murmansk is without doubt vital to the solution of Russia's nuclear legacy problems, yet it is difficult, if not impossible, to assess that contribution in comparative terms. Other G8GP donor countries have undertaken apparently similar work: Norway is contributing to physical security projects, also at Andreeva Bay; France is involved in the safe storage of SNF at Gremikha; and Germany has been concerned with the interim storage of submarine reactor compartments at Saida Bay. In each case, however, the challenges posed, the commitments undertaken and the work schedules agreed are all case-specific, thus preventing any meaningful comparison of performance and delivery across G8GP donors. The most that can be expected, therefore, is to set the performance of the UK government against its own standards of public financial planning and the management of complex projects; standards which, it might reasonably be assumed, are at least as high as those of other G8GP donor governments. From this perspective the indicators are good: the UK has continued to pursue the objectives it set for itself in Northwest Russia, while working with other donors, and seems certain to achieve those goals on budget, on schedule and within the lifetime of the Global Partnership.

Similar comments could be made concerning the UK's contribution to chemical weapons destruction. In a team effort such as the project at the Shchuch'ye CWDF, in which the United Kingdom is closely involved, it would be difficult – if not invidious – to disaggregate and evaluate national contributions separately. As well as the European Union, many more Global Partnership donor countries are contributing to the effort at Shchuch'ye, with projects ranging from an environmental survey to construction of the main CWDF. When fully functional, the Shchuch'ye CWDF will enable the destruction of just over 13 per cent of Russia's chemical weapons legacy: some 1.9 million artillery and rocket munitions containing approximately 5,500 tonnes of the nerve agents sarin, soman and VX. In July 2006 it was announced that the United Kingdom will contribute to the construction of another CWDF at Kizner, intended to destroy a further 14 per cent of Russia's 40,000 tonne CW legacy. Between them, Shchuch'ye and Kizner will enable the destruction of about four million nerve agent-filled munitions, comprising over 90 per cent of all declared Russian CW munitions by number. Some Russian officials have complained that overall Global Partnership assistance with chemical weapons destruction has flowed too slowly.[29] And in early November 2006 concerns were raised that a long-standing disagreement over the award of a contract (not involving the United Kingdom) to construct a CW munitions disassembly line might further delay the Shchuch'ye project. As far as the United Kingdom itself is concerned, however, indications of performance are good; the various UK projects have proceeded on budget and on schedule, and the work being sponsored by the UK will contribute to a substantial reduction of Russia's CW legacy.

In the field of scientist redirection and re-employment, the bulk of the UK effort lies in its support to the UK-Russia Closed Nuclear Cities Partnership (CNCP). The DTI mission and exit strategy for the CNCP read as follows:

> ***The CNCP will, throughout the duration of the Global Partnership up to around 2012, seek to make a real and measurable contribution to reducing the proliferation risks posed by the restructuring of Russia's Closed Nuclear Cities and by relevant nuclear establishments in the CIS.***
>
> ***The CNCP will have achieved its mission when there are systematic measures in place to overcome the adverse social and economic consequences of defence rationalisation through local economic development and business support for job creation in alternative civilian activities.***[30]

Here again, while there is proper concern that contributions should be 'real and measurable', and that 'systematic measures' should be put in place, in terms of performance assessment the standards for success set by the UK government appear either unworkably vague or impossibly high. It is not clear that 'reducing proliferation risks' or 'overcoming adverse social and economic consequences' are sufficiently tangible targets against which to gauge performance, and still less certain by what date in the future it would be possible to judge success or failure in either respect. In other words, while the intrinsic worth of the CNCP, and similar projects run by other G8GP donors, can be assumed, it is rather more difficult to prove. There are, nevertheless, some rudimentary performance indicators available.

By the late 1990s, the Russia nuclear weapon workforce in the ten closed cities had been reduced to between 60,000 and 67,000, from a Cold War peak of about 150,000. In 2002 Minatom (the predecessor to Rosatom) announced that a further reduction of 30,000 closed city workers would be made between 2005 and 2012. Redundancy in the Russian state sector is usually managed carefully and slowly; rather than 'downsize' a workforce immediately and

dramatically, workers are kept in employment until some mutually suitable alternative can be found. By the time of preparation of this report, of the target of 30,000, some 15,000 redundancies had been achieved through suitable alternative employment, natural wastage and retirement, leaving a further 12,000–13,000 redundancies yet to be made. According to HTSPE Ltd, the lead UK contractor for the CNCP, UK efforts should mean that 2,000–3,000 new jobs will have been created, directly and indirectly, over the lifetime of the programme. Of these, over 600 positions are expected to be filled by the so-called 'target audience' of nuclear weapons scientists and technicians assessed to present the greatest risk of proliferation.[31] The indication, therefore, is that UK performance matches – or even exceeds – the level of investment.

Another useful indicator of comparative performance is the cost per job created. The US Nuclear Cities Initiative – the only real comparator for the CNCP – assesses the cost of creating a new job to be between US$10,000 and US$15,000. According to HTSPE Ltd, the CNCP has achieved a cost/job ratio of £4,940, a result which is 'in line with good practice, suggesting that CNCP is a cost-effective programme'.[32]

• **Multiplier Effect**. There are two aspects to the idea of a 'multiplier effect' as an indication of UK performance in the Global Partnership: organizational and reputational. The first of these asks whether the United Kingdom has helped to facilitate the broader G8GP effort. This certainly seems to be the case in a number of UK project areas, including submarine dismantlement and chemical weapons destruction. UK activities in Northwest Russia are another example of the organizational multiplier effect. It is not, of course, possible to prove that another government in the same position would have acted any differently, but the following list indicates that the UK government has at least played a part in coordinating international effort in Andreeva Bay and elsewhere in the region:

- Establishment of the Andreeva Bay Coordination Group for international donors;
- Establishment of the Project Management Group to coordinate Russian activities at Andreeva Bay;
- Development of an overall, integrated site strategy;
- Development of nuclear infrastructure in collaboration with Sweden;
- Cooperation with Norway for non-nuclear infrastructure (roads, utilities etc.);
- Exploratory discussions with Italy on potential cooperation;
- Liaison with France on transfer of designs and methodologies from Andreeva Bay to Gremikha.

The reputational effect is more difficult to describe, and much more difficult to quantify. Has the United Kingdom's contribution to the Global Partnership helped to validate the initiative in the eyes of other donors and beneficiaries? Put another way, has UK activity helped in the social construction of the Global Partnership as a worthwhile exercise? Certainly, it would seem that the reputation of the United Kingdom within the Global Partnership could scarcely be higher. In the course of this review, comments were invited on the United Kingdom's performance from a variety of sources: foreign governments (both co-donors and recipients), international governmental and non-governmental organizations, and commercial contractors and consultants. The selection of interviewees was not exhaustive but was representative. Although there were some adverse comments, these often did not stand up to close analysis. For example, one complaint that the UK had not yet met its pledge of US$750 million failed to accept that the pledge was for *up to* that sum, and that the pledge would in any case probably be met (if not exceeded) by 2012. Otherwise, one Russian official described himself as 'completely satisfied' with the UK effort, which other discussants described as 'exceptional',

'impressive', 'exemplary' and (in the words of a US official) a 'profound success'. In one interview, the United Kingdom was described as a 'pillar' and 'a backbone of the Global Partnership'. Most tellingly, perhaps, one partner donor government complimented the United Kingdom for providing an 'acceleration effect' for other G8GP donors. Private-sector discussants were just as complimentary; one discussant went so far as to describe working with the UK government as 'a joy'.

Judging by these comments, the United Kingdom would appear to have a good reputation within the Global Partnership. Comments made during an interview, however, scarcely constitute a scientifically respectable performance indicator. What matters as much is whether the United Kingdom's reputation can be shown to have boosted contributions to the Global Partnership. The so-called 'piggy-backing' phenomenon does indeed suggest a correlation between the UK's good reputation and the level of contributions by other donor governments to UK-led or UK-organized projects. Although it is difficult to assess the precise value of UK piggy-backing arrangements, by its own account the UK has been able to broaden the international effort at Shchuch'ye, helping to bring a further £48.5m of support to CWDF projects there.[33] There is, of course, some diplomatic sensitivity to this, since donor governments may well be reluctant to have their Global Partnership contribution portrayed as ancillary to the UK effort. In one case, a donor government regards the term 'piggy-backing' as demeaning, and prefers to speak of 'partnering' with the UK. Another discussant, however, was sufficiently impressed by the piggy-backing model to suggest that the United States might emulate it. The piggy-backing model also resonated with private-sector discussants, as a pragmatic and goal-oriented approach to collaboration.

Overall, therefore, it would appear that UK policies and activities have increased the 'stickiness' of the norms which drive the Global Partnership – at least making defection by donor governments more difficult and politically embarrassing, and at best positively encouraging and enabling support and compliance with the Global Partnership.

Summary: Section 4

In many areas of political and economic activity, precise, objective and incontrovertible assessment of performance is difficult to achieve. In the case of the Global Partnership, the definitive measurement of performance appears close to impossible. Across the Global Partnership, performance assessment is very under-developed, even at the national level. Within the Global Partnership as a whole, budgets, expectations and activities vary widely. Assessments of donor governments' performance are, consequently, difficult to make, even in what should be relatively straightforward matters of financial efficiency and rates of overhead. To a large extent, the explanation is that the Global Partnership is an extraordinarily complex, multinational undertaking, on an unprecedented scale. Furthermore, the thresholds of success – namely the prevention of proliferation and terrorist access to and use of CBRN weapons and materials – are exceptionally high and long-term, as well as logically difficult to prove, making it doubly difficult to gauge the immediate merits of a given Global Partnership activity.

But if *measurement* is not strictly feasible, some *impression* can nevertheless be formed of the quality of the United Kingdom's performance, based on a selection of performance indicators. The indicators examined here – Policy Consistency, Operational Efficiency, Comparative Pledge/Expenditure Ratios, Comparative Outputs, and Multiplier Effect – provide a wide range of information; internal and external, subjective and objective, quantitative and qualitative. These indicators all point in broadly the same direction: by any reasonable standards, the UK's performance in the Global Partnership ranges from 'acceptable' to 'exceptional'.

5 FUTURE PRIORITIES FOR THE UNITED KINGDOM

Introduction

In June 2002, at the G8 summit meeting in Kananaskis, the United Kingdom effectively relaunched several long-standing national cooperative threat reduction programmes – principally in the nuclear and chemical areas – under a new banner. From the early 1990s up to 2002, its involvement in these activities had been driven by the perception that it was in the UK's national interest – politically, strategically, economically and even environmentally – that the nuclear, chemical and (latterly) biological legacies of the Cold War Soviet Union be managed and mitigated as safely and securely as possible. On joining the Kananaskis initiative in 2002, the United Kingdom took these national priorities into a broader and more explicitly collective effort, in which it saw itself as a prominent stakeholder. From June 2002, in other words, UK policy was driven by yet another imperative – the success of a new joint venture known as the Global Partnership.

For the remainder of the Global Partnership, until at least 2012, it is in the United Kingdom's national interest to ensure that tangible achievements are made in various national priority areas of legacy management and threat reduction. Given that considerable sums of public money, as well as time and expertise, have been drawn upon, it is essential that the various projects sponsored by the United Kingdom – some of which have only very recently become operational – be allowed to run to completion. Equally, it is now a national policy imperative for the United Kingdom that the joint venture to which it has subscribed achieves all or at least most of the goals set for it at Kananaskis. This argument could become progressively more important and perhaps more difficult to make as the Global Partnership progresses.

In the 2002 Kananaskis summit declaration, participants committed themselves to support Global Partnership activity 'over the next ten years'. The Kananaskis declaration did not, of course, indicate that the Global Partnership would halt in its tracks after ten years, and it is in any case inconceivable that the entire Global Partnership agenda could be met in just one decade. The ten-year deadline is arbitrary and means little in the context of the complex projects being undertaken. Yet dates and deadlines can acquire political significance of their own. Thus if by 2012 there were still, say, a dozen or so decommissioned nuclear-powered submarines intact and unsafe, some hundreds of thousands of artillery shells still filled with nerve agent, and a few thousand nuclear weapon scientists still disaffected and jobless, then it might be too easy to argue that the Global Partnership had not succeeded in its aims and should therefore no longer be supported. This would be a disastrous outcome, both for the cause of global non-proliferation as a whole and in terms of the commitment and investment made by the United Kingdom. It is in the United Kingdom's national interest, therefore, not only for 2012 to be understood as a key milestone rather than as the culmination of all Global Partnership activity, but also for there to be very clear and convincing evidence of progress across a wide range of Global Partnership programmes by that date, with realistic prospects for successful completion. Furthermore, there will also need to be clear understanding of which challenges remain, and which of those will require a coordinated international approach through the Global Partnership or other such mechanisms.

Future Priorities

For the short-term future, up to 2012 and perhaps slightly beyond, the task confronting the United Kingdom's Global Partnership policy-makers is to find ways to pursue both national and

collective goals simultaneously. As an active member of the Global Partnership, the United Kingdom must be understood as a national actor contributing to a collective effort. Of course, the United Kingdom also contributes funds and support to a number of multilateral initiatives within the Global Partnership, but only insofar as these activities reinforce national goals by other means. As a single national contributor, the United Kingdom clearly cannot expect or be expected to ensure the success of the Global Partnership as a whole. What it can reasonably be expected to do, however, is to ensure that its activities at least complement and preferably reinforce the broader effort. With this in mind, at the most general level the UK's priority should be to maintain the collaborative character and the broad thrust of its policy. As demonstrated in this review and in background research, the record shows that the consistency, coherence and professionalism of the United Kingdom's policies have added value to the collective effort and, furthermore, have multiplied that effort by encouraging and enabling other governments to sponsor Global Partnership initiatives. As noted above, this alone is not sufficient to guarantee the success of the Global Partnership, but if national governments do not or cannot generate a collaborative spirit then collective failure becomes ever more likely, with national failure following not far behind.

At the operational level, for all that the United Kingdom retains its autonomy as a contributing government pursuing its national interest, it would be illusory to suppose complete freedom of choice in establishing priorities for the remainder of the Global Partnership. In the first place, projects which have begun – or are about to begin – must be brought to a conclusion, or money and effort will have been wasted. Second, it is not immediately apparent that Global Partnership activities are in any practical or strategic sense substitutable. How many spent fuel assemblies equate to how many disaffected weapon scientists, or to how many chemical warfare munitions? Which of these activities addresses a proliferation security risk which is now negligible and can therefore be curtailed? And finally, there are spending constraints to consider. Current commitments, to actual projects being implemented on the ground, only extend out for two to three years. For the remainder of the United Kingdom's involvement in the Global Partnership, spending commitments will be shaped by analysis of changing policy and security priorities, and emergent threats. Future Spending Review settlements, such as that due in 2007, will also shape decisions. But for all that, it seems unlikely that the United Kingdom's Kananaskis pledge of up to US$750 million will be formally revised upwards. For these reasons, how the United Kingdom's Global Partnership priorities are presented increasingly matters as much as what those priorities are. In a number of issue and activity areas, without reorganizing its policy agenda dramatically, it should be possible for the United Kingdom to demonstrate that the pursuit of national interest is compatible with a collective effort and that each can augment the other. If by this example other donors (and beneficiaries) could be further encouraged and enabled to participate in the Global Partnership, then the United Kingdom's operational achievements will have increased strategic effect. This would improve the prospects for collective and UK national success far more than might be achieved by a reallocation of funds from one UK activity to another. A selection of appropriate issue and activity areas is discussed below.

• **Threat Analysis**. A number of commentators have complained that the Global Partnership is not driven sufficiently closely by a careful assessment of the global threat. By one view, 'The bottom line is that a more comprehensive, more threat-driven program is required and that current efforts fall substantially short.'[34] And in a similar vein, others argue that the G8 'has yet to formulate a prioritized plan for tackling the deadliest threats in the shortest period of time.'[35] The claim here is that the Global Partnership should be based upon a formal, presumably open source threat assessment which identifies and prioritizes the dangers of terrorist acquisition of CBRN worldwide. Without such an assessment, the Global Partnership

can never be much more than an ad hoc arrangement, responding only to those problems which fall most obviously within a donor country's sphere of interest and capability. Bleek has described the content of his 'comprehensive threat assessment' in the following way: 'for each site, specifics on the quantities and characteristics of the nuclear materials present there, the current level of security at the site, a threat assessment that incorporated relevant terrorist or other activity in the region or specific location, and opportunities to engage specific sites by meeting anticipated or enunciated needs'.[36]

Other analysts have argued that the Global Partnership could be more explicit regarding the danger of terrorist acquisition of CBRN materials, and that ways should be sought to focus the experience and skills accrued under the Global Partnership more directly on the terrorism issue. The Global Partnership could, for example, make more effort in holding CBRN terrorism scenarios and planning scenarios. The authors of the Carnegie Endowment's *Universal Compliance: A Strategy for Nuclear Security* argue for a 'Contact Group to Prevent Nuclear Terrorism', the purpose of which would be 'to establish a new global standard for protecting weapons, materials and facilities'.[37]

Threat assessments are complex, however. In a group such as the Global Partnership, with over twenty participants, it might be difficult to agree on the substance of a threat assessment, or even on what was being threatened. If the threat assessment were to be based on classified intelligence material, it seems highly likely that the process would rapidly grind to a halt as some governments would refuse to share key information with certain others. If it were based on open sources, in the public domain, then it might be asked what the threat assessment would add. When so little is known about the terrorist adversary (or, at least, when so little can be placed in the public domain) a 'comprehensive threat assessment' might simply generate more questions (particularly about the adversary's intent) than it is possible to answer. In these circumstances, the terrorist adversary retains the initiative and paradoxically controls both the pace at which the threat assessment is completed and the quality of the information contained within it. The threat assessment thus loses much of the merit it might have had as a basis for public security policy and becomes instead the basis for public anxiety.

Certainly, the United Kingdom and other governments could be more explicit in presenting their Global Partnership work in terms of preventing further proliferation and terrorist access to CBRN materials and weapons. At a time of sharpened public and media awareness of the dangers of proliferation and the threat of terrorist activity, this seems an obvious way to exert pressure on potential donor governments to join the collective effort, to the benefit of all. That said, however, the practical achievements of the Global Partnership should not be made hostage to inevitably incomplete and contingent threat assessments fixated upon the terrorism/CBRN nexus. It is known that spent nuclear fuel from a submarine could cause very high radiological hazards if dispersed via a 'dirty bomb' or by some other means. That some terrorist group or other *might* wish to acquire such material is sufficient grounds to seek to prevent such an outcome; a complex threat assessment is not required to come to this conclusion. It is self-evident that spent nuclear fuel should be secured, just as it is self-evident that chemical weapons should be destroyed, that highly enriched uranium (HEU) in research reactors should be guarded as closely as possible or (preferably) replaced with other material, and that weapons scientists should be given incentives not to proliferate their knowledge and expertise to the highest international bidder. While being properly conscious of these threats, the UK government has the experience and authority to make the argument that real, practical achievements can and must be made by the Global Partnership without the need for overly complicated analysis of the threat.

• **Global Partnership Agenda**. Some analysts have welcomed the priority accorded by the Global Partnership to the disposal of Russia's nuclear-powered submarines. Chuen argues that 'Russia's nuclear-powered submarines and their fuel pose serious environmental and security risks. The most severe include the risk of proliferation of materials that could be used in the creation of nuclear devices or radiation dispersal devices (also known as "dirty bombs").'[38] She also argues that because spent nuclear fuel is extremely difficult to remove from a submarine, it is actually safest if left on board a submarine, and more vulnerable to theft when stored ashore. The security and safeguarding of SNF should be a priority, but rather than simply removing fuel rods and storing them ashore, what is needed is a large-scale, comprehensive physical security effort.[39] This view is supported by others who take issue with the argument that SNF is so harmful to life that security of storage is automatically assured. The radioactivity of the nuclear fuel on submarines decommissioned 15–20 years ago, for example, 'has decreased considerably, and can no longer be considered "self-protecting"'. As a result, 'This fuel has come to represent a danger from the point of view of nuclear materials proliferation.'[40]

The consensus view in the United States, however, is that the Global Partnership has become too focused on submarine dismantlement and the destruction of chemical weapons: 'Submarine dismantlement and chemical weapons disposition are important, but they neither encompass nor are they necessarily the most threatening mass destruction proliferation threats.'[41] By this view, submarine dismantlement represents European concerns about the health of the natural environment, while CW destruction is essentially geared to making it possible for the Russians to meet their obligations under the Chemical Weapons Convention. Both of these activities are essential, yet neither is sufficiently close to the original Kananaskis goal of denying terrorists access to CBRN materials and technologies. The core activity of the Global Partnership, it is argued, should rather be to ensure the physical safeguarding of key materials – particularly HEU and separated plutonium – to prevent their acquisition by terrorists.

Russia, on the other hand, has been equally adamant that the priorities of the Global Partnership were, are and should remain the disposal of nuclear-powered submarines and their fuel, and the destruction of chemical weapons. In early 2006 Sergei Kislyak, Russia's Deputy Foreign Minister, described Russia's Global Partnership priorities in the terse and unequivocal manner which has lately typified the Putin administration's approach to the Kananaskis initiative: 'scrapping chemical weapons and assistance in resolving environmental problems during the implementation of the Russia programme on dismantling nuclear submarines'.[42]

This difference of opinion over the fundamental goals of the Global Partnership represents an opportunity for the United Kingdom. Precisely because it has maintained a broad range of activities, rather than concentrating on one or two areas, the UK now finds itself in a position to support both sides of the argument and to show that the Global Partnership can – and must – work towards the most ambitious targets while achieving the more obvious ones. Thus, as a partner trusted by both the United States and Russia, the United Kingdom can agree that the disposition of separated plutonium and HEU are strategic challenges which cannot be overlooked, and it has a record which shows a commitment to these goals, including work in nuclear safety and security and the allocation of significant funds to the Plutonium Disposition Agreement. But the United Kingdom can also make the argument that as a basis for Global Partnership policy, threat assessments should be neither complex nor selective; there is more than enough redundancy within the CBRN system for terrorists to exploit, making it essential for the Global Partnership to deal with the problem as a whole, rather than in parts. And of course the United Kingdom can make the converse argument with Russia. The strategic and environmental benefits of submarine dismantlement and chemical weapons destruction are obvious and compelling. Quite apart from the imperative not to waste money and time already

spent, these two areas offer tangible goals which can be achieved, and which might help to convince other donors of the benefits of the Global Partnership. But again, for the Global Partnership to reduce its ambitions to these two areas would be an error on a global strategic scale – an argument which the United Kingdom can make with conviction and credibility.

• **Scientist Redirection.** Finding alternative employment for former weapons scientists was noted as a 'priority concern' at the Kananaskis summit in June 2002. The UK contributions to this work within the Global Partnership have been described elsewhere in this paper as well-conceived, appropriately funded and cost-efficient. Among donor and beneficiary governments, and relevant international institutions, the United Kingdom's reputation in this field is very good. Scientist redirection has also been an area where the UK government has been able to develop a particularly efficient and productive relationship with private-sector contractors. For all these reasons, there would be good grounds to suggest that the United Kingdom should make more of this 'success story' and expand its scientist redirection activity wherever and whenever possible. There could be a case, for example, for seeking to persuade Rosatom to grant UK access to the three Closed Cities which remain off-limits. Improved access could also be sought to Rosatom's Closed Institutions in open cities (such as IPPE in Obninsk and NIIAR in Dimitrovgrad). And looking beyond the Russian Federation, in 2004 the United Kingdom began work on scientist redirection in Kazakhstan, Ukraine and Uzbekistan, and could in future seek access to institutions in other former Soviet countries, such as Armenia, Belarus and Georgia.

Alternatively, it could be that the best way for the United Kingdom to contribute to efforts to re-employ former weapon scientists is simply to maintain its existing programme. By this view, what is more important than expanding the quantity of work is to continue to make the qualitative argument about the benefits of scientist redirection. The efficacy of scientist redirection work is probably among the most difficult to prove of all Global Partnership initiatives; a submarine can be dismantled, a chemical munition can be destroyed, but can the danger ever really be removed from the mind of a scientist? Yet this work plainly has to be done. In the aftermath of the revelations surrounding A.Q. Khan's nuclear proliferation network,[43] despite the risk that a given scientist redirection project might not work, there is a much more compelling risk – if not a certainty – that in the absence of such efforts another A.Q. Khan could emerge. The commitment of the UK government to scientist redirection validates the effort overall, showing that although success is difficult to measure, serious governments see this as an essential effort. By maintaining its programme, and through its admirable reputation as a serious and effective participant in the Global Partnership, the United Kingdom remains in a strong position to remind partner governments that UK and other sponsors of scientist redirection cannot achieve all that is needed, and that a broader base of support is urgently required.

• **Chemical Weapons.** In the field of chemical weapons destruction, the United Kingdom is a fully committed and effective participant in Global Partnership efforts. For the remaining years of the Kananaskis process, the UK agenda is already full, continuing with efforts to enable Russia to meet its obligations under the Chemical Weapons Convention, principally by continuing its work at Shchuch'ye, and by supporting the construction of the seventh chemical weapon destruction facility at Kizner.[44] The construction and commissioning of the Kizner facility offers an important opportunity for the United Kingdom to use the reputation it has acquired at Shchuch'ye, as a politically dependable, managerially astute and technically competent sponsor of CW destruction, drawing other donor governments into the joint effort.

In its work on CW destruction, as elsewhere in its Global Partnership portfolio of activity, the United Kingdom's particular contribution has been its skill in implementing complex projects, a

skill which has evolved as the Global Partnership has progressed. It is not the case that the United Kingdom has sought to develop and market a unique capacity in, for example, the draining of nerve agent from CW munitions. Rather, it has sought to apply, efficiently and effectively, capabilities and skills which are not necessarily specific to CW destruction. In most cases, the project in question will involve fairly standard project management and civil engineering skills, supported by contracting and financial expertise. It happens that the application of these standard skills and expertise is in support of a very non-standard activity – the destruction of chemical weapons. But in the end, a railway line or electricity substation built at Shchuch'ye should be much like any other. Even much of the equipment procured for the destruction facility is more or less standard in design. The distinctive feature of this work is, of course, the context (political and geographical) in which it takes place. Here, the comparative advantage developed by the UK government, across the different programme areas, has been its ability effectively to manage civil contractors working in remote areas but nevertheless completing a project on cost and on schedule. For the UK government, this has required a substantial commitment of official time and resources on agreeing legal and liability frameworks with the host nation, and coordinating efficiently with, or leading, a number of donors to achieve common aims, including in some cases contracting and managing funds on their behalf. It is at least conceivable that these complex project implementation skills – by now very highly developed – could be applicable in situations of similar political and geographical complexity, such as in small arms destruction work, defence-sector conversion projects, or even in the security/development nexus, in humanitarian assistance and post-conflict reconstruction.

• Biological Projects. As far as bio-safety and bio-security are concerned, an authoritative study published in June 2006 notes that of the US$20 billion budget for the Global Partnership, a mere 1.5 per cent (US$300 million) has been committed to bio-related programmes. The study recommends, *inter alia*, that additional funding should be made available and that the Global Partnership should facilitate an international effort in 'securing and consolidating vulnerable stocks in certified facilities or destroying them'.[45] Bio-safety and bio-security did not figure prominently in the Kananaskis declaration, but are surely central to any discussion of the dangers of CBRN proliferation and CBRN terrorism. Valuable work has been undertaken under the auspices of the Global Partnership in the areas of epidemiology and disease control, scientist redirection and immunization. But these efforts are barely adequate when set against the risk of terrorist acquisition and use of a lethal biological agent.

The UK government has argued the case for bio-safety and bio-security to be viewed not as problems of traditional security or arms control, but as a matter of terrorism prevention. By offering incentives for economic and commercial development in biological research, and having been conscious of Russian sensitivities in the biological field, the UK's approach has been well received in Moscow. For the remainder of the Global Partnership, the expected wind-down in UK CW-related activity might offer some scope for increased activity by the United Kingdom in the biological area. If so, the priority should be to support Russia's own efforts in counter-terrorism work in the biological sector. Otherwise, there might be scope for closer UK–Canadian cooperation on bio-safety and bio-security, continuing the successful partnership formed over CW destruction, and perhaps for the United Kingdom to facilitate related work by the European Union and others.

Summary: Section 5

The United Kingdom's priority for the remaining years of the Kananaskis process must be to ensure that initiatives undertaken and projects begun are all pursued to completion, within the time available and within budget. However, it makes little sense to analyse UK priorities in national terms alone; it is in the United Kingdom's national interest that the multilateral effort of the Global Partnership should succeed. Overall, therefore, the United Kingdom's strategic priority should be to pursue its national goals in ways which complement and reinforce the collective effort.

The United Kingdom can exploit its experience and its success to date in a number of ways which should help to consolidate the Global Partnership effort overall. On the often vexed issue of threat analysis, it can argue with authority that practical achievement matters more than overly complicated threat assessments; enough is already known about the dangers of spent nuclear fuel and chemical munitions for these to be dealt with as a matter of urgency. As far as the general thrust of the Global Partnership agenda is concerned, the UK can argue against the notion that any one CBRN problem is more urgent or dangerous than another. Instead, the Global Partnership should deal with CBRN as a system, one which offers a variety of mass effect weapons and which has enough redundancy for terrorists to exploit. While the Global Partnership should work towards the most ambitious targets (the disposition of separated plutonium, for example), it would be a mistake to overlook the most obvious, such as the destruction of chemical munitions. With regard to CW destruction, the United Kingdom's priority should be to bring its committed projects to a successful conclusion. In addition, it could assume a facilitation role at the Kizner CWDF for the European Union and other likely donors. The United Kingdom's contribution to CW destruction (and other aspects of its Global Partnership work) illustrates another point: that the UK government has by now developed very advanced skills in the management and implementation of politically and geographically complex projects – skills which could be applied elsewhere, in a variety of conceivable scenarios, as the situation warrants. The United Kingdom is also, arguably, in a good position to facilitate work on biological projects, while supporting Russian efforts in bio-related counter-terrorism. Finally, as far as scientist redirection is concerned, the United Kingdom's priority should be to pursue its national programme to successful completion, but in so doing to make the point by example that ensuring the re-employment of former weapon scientists is a serious and urgent activity. In other words, difficult though it is to establish quantitatively the value of scientist redirection, the United Kingdom's national efforts should be presented in such a way as to reinforce the qualitative argument for such work, the success of which should be a priority for the Global Partnership as a whole.

6 CONCLUSION

The purpose of this report was to provide an independent assessment of the United Kingdom's participation in the G8 Global Partnership (G8GP), in order to judge the efficiency and effectiveness of its contribution to date, and in order to inform future policy.

Section 2 of the report provided a Review of Strategy and Operations. Even before the Kananaskis summit in June 2002, the UK government has presented its strategic goals clearly and in an easily communicable manner, and these goals have been set and pursued in a pragmatic, goal-oriented spirit. That is to say, a characteristic of the UK contribution to the Global Partnership has been to undertake projects which offer good prospects of success. Like all governments and relevant international bodies, the United Kingdom must be concerned that CBRN weapons, technologies and materials might find their way into the 'wrong hands' of state and non-state proliferators. But within the Global Partnership, the United Kingdom's focus has been on practical, incremental steps rather than on the pursuit of an overarching solution to the challenge of international proliferation.

Throughout the course of the Kananaskis project the United Kingdom has been especially understanding of the Russian perspective, as a sovereign government receiving international assistance in various sensitive areas of national security and industrial policy. But the UK government has been wary of entanglement in its relationship with Russia; hence the carefully phrased language of 'encouragement' and 'assistance' to the Russian government. The UK government has been reluctant, in other words, to position itself as the one-stop solution to Russia's problems. The United Kingdom's characteristic pragmatism is also in evidence here. Like other Global Partnership donor governments, the UK government can only work in geographical and functional areas where legal agreements have been drawn up, covering liability, tax exemption and access to project sites. Without such agreements, it would be impossible, or at least very unwise, to initiate complex and expensive engineering and infrastructure projects.

The United Kingdom has selected four 'broad objectives' to govern its participation in the Global Partnership: the security of nuclear weapons and expertise; the safety and regulation of nuclear facilities in the Former Soviet Union; environmental clean-up and decommissioning; and assisting Russia in meeting its commitments under the Chemical Weapons Convention. Each of these objectives is supported by a range of projects and initiatives, and there are no obvious gaps between strategic objectives and operational activity. It does appear, however, that the United Kingdom's work in the biological area is rather understated at the strategic level and in terms of declared policy. Many analysts of CBRN proliferation regard biological weapons as an extremely potent and all too available weapon of mass destruction, particularly attractive to terrorist groups. There is a case, therefore, for giving this issue greater prominence in UK Global Partnership strategy.

Section 3 of the report – Matching Resources to Strategy – examined the correlation between the United Kingdom's Global Partnership strategy and the level and structure of funding. It is essential to note that the United Kingdom pledge at Kananaskis was for 'up to' US$750 million, with 'up to' US$100 million of that total subsequently set aside for chemical projects. In both cases, the UK pledge was intended to be a ceiling, and it would remain for the government to decide how much of the pledged figures would be spent, on which projects and at what pace. The United Kingdom has supported a wide range of Global Partnership activities, but expenditure patterns show that priority has indeed been accorded to the UK strategic goals of

nuclear security, nuclear safety (now running down), nuclear clean-up and decommissioning in Northwest Russia, and chemical weapons disposal. Resources and strategy are closely matched, in other words. Public spending plans can change, but there are at present no obvious reasons to suppose that the United Kingdom Global Partnership budget will not be able to support planned projects and activities up to 2012, and for a period beyond while projects run their course. Overall, the United Kingdom's financial commitment to the Global Partnership was found to be careful and measured, and might usefully be described as strategy-led, rather than expenditure-driven.

The fourth section of the report examined issues of Performance Assessment. Though politically and financially necessary, the measurement of national performance in the context of the Global Partnership is methodologically difficult, to the point of being impossible. Across the Global Partnership, performance assessment is very under-developed, even at the national level. Within the Global Partnership as a whole, budgets, expectations and activities vary widely. It is difficult, if not impossible, to ascertain precisely the effectiveness of a country's contribution to the collective effort, even in what should be relatively straightforward matters of financial efficiency and rates of overhead. To a large extent, the explanation is that the Global Partnership is an extraordinarily complex multinational undertaking, on an unprecedented scale. Furthermore, the thresholds of success – namely the prevention of proliferation and terrorist access to and use of CBRN weapons and materials – are exceptionally high and long-term, as well as logically difficult to prove, making it doubly difficult to gauge the immediate merits of a given Global Partnership activity. Nevertheless, an overall impression of UK performance can be formed, using a selection of performance indicators. Five indicators were examined; Policy Consistency, Operational Efficiency, Comparative Pledge/Expenditure Ratios, Comparative Outputs, and Multiplier Effect. These indicators all point in broadly the same direction; by any reasonable standards, the United Kingdom's performance in the Global Partnership ranges from 'acceptable' to 'exceptional'.

Finally, Future Priorities for the United Kingdom were discussed in Section 5. The central conclusion here was that the United Kingdom's priority for the remaining years of the Kananaskis process should be to ensure that initiatives undertaken and projects begun must all be pursued to completion, within the time available and within budget. However, it makes little sense to analyse UK priorities in national terms alone; it is firmly in the United Kingdom's national interest that the multilateral effort of the Global Partnership should succeed. Overall, therefore, the United Kingdom's strategic priority should be to pursue its national goals in ways which complement and reinforce the collective effort. With this dual objective in mind, the United Kingdom is in a good position to make the obvious argument that the Global Partnership is best supported by the practical achievements of donor governments, and that this work can be pursued without the need for an elaborate threat assessment agreed between all donors and beneficiaries of the Global Partnership. A comprehensive Global Partnership threat assessment makes the best the enemy of the good, by assuming a level of action and decision-making which is, at least for the present, rather rudimentary, and by questioning the rationale for and pursuit of national priorities within the Global Partnership. Enough is already known about the dangers of spent nuclear fuel and chemical munitions, for example, for these mitigation activities to be sponsored by donor governments as a matter of urgent national interest, and to the benefit of the Global Partnership as a whole. The United Kingdom can also make the argument, from experience and practical achievement, that the problems being confronted by the Global Partnership are inseparable. Chemical, biological, radiological and nuclear weapons and materials, of course, require very different approaches from each other but they should, as far as possible, be dealt with as a system, one which offers a variety of

mass effect weapons and which has enough redundancy for terrorists to exploit. While the Global Partnership should work towards the most ambitious targets (the disposition of separated plutonium, for example), it would be a mistake to overlook the most obvious, such as the dismantlement of submarines, the safe storage of spent nuclear fuel, the re-employment of former weapons scientists and the destruction of chemical munitions. Budgets permitting, there is one area in which the United Kingdom could consider expanding its portfolio: by facilitating work on biological projects and supporting Russian efforts in bio-related counter-terrorism.

From 2002 to 2006 the United Kingdom's contribution to the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction has been well planned and organized, appropriately funded and efficient, and – above all – effective. For the remaining years of the Global Partnership, its central objective must be to ensure that the broad portfolio of UK-sponsored projects and initiatives be brought to a successful conclusion, on schedule and within budget. This will serve the UK's national interests as well as the collective goals of the Global Partnership. The United Kingdom is a G8 member and a long-standing contributor to threat reduction activities of the sort now being undertaken by the Global Partnership. As such, it sets an example for other donors and potential donors to follow: by practical achievement; by showing that its national objectives can be pursued in a collective context; and by demonstrating that with careful management, pledges to the Global Partnership can and should be converted into real and productive expenditure.

Notes

[1] There is some dispute over the geographical priorities of the Global Partnership – possibly a consequence of translation from English into Russian. The 'Statement by G8 Leaders' as recorded on the Canadian Government's official website uses the expression '*initially* in Russia', which is generally accepted as authoritative. See *http://www.g8.gc.ca/2002Kananaskis/globpart-en.asp.* However, others prefer the term '*primarily* in Russia' which could imply a rather more enduring concern with resolving problems in Russia. See V. Orlov et al., *Guidebook: Global Partnership Against the Spread of Weapons of Mass Destruction* (Moscow: Human Rights Publishers, 2006), p. 7.

[2] G. Andrew, A. Barlow, M. Bearman, B. Burrows and M. Ward, 'UK Co-operation with the Russian Federation and Kazakhstan in Nuclear Material Accountancy and Control,' working document for the 17th annual meeting of the European Safeguards Research and Development Association, May 1995.

[3] A comprehensive account of UK cooperative threat reduction activity during the 1990s and up to 2002 can be found in P. Cornish, 'United Kingdom', in R.J. Einhorn and M.A. Flournoy (eds), *Protecting Against the Spread of Nuclear, Biological and Chemical Weapons. Volume 3: International Responses* (Washington, DC: Center for Strategic and International Studies, January 2003).

[4] Rather than seek safe and environmentally sound ways to dispose of spent nuclear fuel, the Russian practice before 1994, reportedly, was simply to dump nuclear waste at sea: between 11,000 and 17,000 containers of solid waste, about 165,000 cubic metres of liquid waste, and as many as 19 nuclear reactors (some with nuclear fuel still *in situ*). See D. Rudolph, 'AMEC: Protecting the Coastal and Marine Environment in the Russian Arctic', *RUSI Defence Systems,* Autumn 2005, p. 95.

[5] See 'Cross-Departmental Review of Nuclear Safety in the Former Soviet Union', HM Treasury Spending Review 2000 Report, Chapter 37, para. 37.2: *http://www.hm-treasury.gov.uk/.*

[6] Ibid, para. 37.5.

[7] Source: Department of Trade and Industry, 2006.

[8] The UK's strategic objectives for the Global Partnership are compatible with participation in the Global Initiative to Combat Nuclear Terrorism (GICNT), launched at the St Petersburg G8 Summit in June 2006. See *http://en.g8russia.ru/docs/7.html.* UK contributions to cooperative threat reduction programmes through the GICNT will be undertaken as part of the Global Partnership nuclear programme led by the DTI.

[9] UK Government, *The G8 Global Partnership: Progress Report in the UK's Programme to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union* (London: DTI, 2003); UK Government, *The Global Partnership: Progress During 2004 on the UK's Programmes to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union* (London: DTI, 2004); and UK Government, *The Global Partnership: Progress During 2005 on the UK's Programmes to Address Nuclear, Chemical and Biological Legacies in the Former Soviet Union* (London: DTI, 2005).

[10] Sergei Antipov, former Deputy Head of the Federal Atomic Energy Agency, Russian Federation (Rosatom), in remarks to the PIR Center Conference, Moscow, 21 April 2006.

[11] Rudolph, 'AMEC', p. 98.

[12] UK Government, *The Global Partnership: Progress During 2005*, p. 49.

[13] S.K. Wiener, 'Preventing Nuclear Entrepreneurship in Russia's Nuclear Cities', *International Security* 27/2, Fall 2002, pp. 126–7, n. 4.

[14] UK Government, *The Global Partnership: Progress During 2005*, p. 23.

[15] Source: ISTC Moscow, 6 June 2006.

[16] According to Natalia Kalinina, Deputy Head of the Russian Federation Accounting Chamber Inspectorate, and a noted Russian expert on CW destruction, the delay is due to the international community being too slow to meet its 1990s pledges to assist Russia, or attaching too many conditions to that assistance; quoted in Orlov et al., *Guidebook: Global Partnership*, p. 45. Russian CWD funding suffered substantial delays, but was made a political and budgetary priority and was expected to see an increase from a budget of 380m roubles in 1998 to an expected 2,400m roubles in 2006. Source: UK Ministry of Defence.

[17] UK Government, *The Global Partnership: Progress During 2005*, p. 28.

[18] For a brief summary of the 'extensive offensive BW programme maintained by the Former Soviet Union', see UK Government, *The G8 Global Partnership: Progress Report* [2003], p. 17.

[19] P.F. Walker, 'Nunn-Lugar at 15: No Time to Relax Global Threat Reduction Efforts', *Arms Control Today* 36/4, May 2006. *http://www.armscontrol.org/act/2006_05/nunnlugar15.asp?print.*

[20] Orlov et al., *Guidebook: Global Partnership*, pp. 85–6.

[21] Orlov et al., *Guidebook: Global Partnership*, p. 59.

[22] The qualifier 'up to' is key; the figure of US$750 million was regarded by the UK government as a target, rather than an absolute commitment, and it would remain for the UK government to decide how much of that target should be committed.

[23] Source: HTSPE Ltd.

[24] UK Government, *The Global Partnership: Progress During 2005*, p. 50.

[25] Orlov et al., *Guidebook: Global Partnership*, p. 150.

[26] For 2002–03, £1.00 to US$1.50; for 2003–04, £1.00 to US$1.63; for 2004–05, £1.00 to US$1.83; for 2005–06, £1.00 to US$1.82.

[27] Strengthening the Global Partnership, 'Global Partnership Scorecard' (Center for Strategic and International Studies, Washington DC, July 2006). *See www.sgpproject.org.*

[28] Sergei Antipov, former Deputy Head of the Federal Atomic Energy Agency, Russian Federation (Rosatom), in remarks to the PIR Center Conference, Moscow, 21 April 2006.

[29] Orlov et al., *Guidebook: Global Partnership*, p. 50.

[30] UK Government, *The Global Partnership: Progress During 2005*, p. 39.

[31] Among the jobs created under the CNCP, there is a contractual obligation to ensure that at least 55 per cent involve staff within the nuclear establishments. Within this number, the 'target audience' of about 600 are those scientists who have received higher education and who have gained experience in a nuclear weapons establishment over a number of years. Source: HTSPE Ltd.

[32] G. Kaser, 'Motivation and Redirection: Rationale and Achievements on the Russian Closed Nuclear Cities'. Unpublished paper presented at the NATO RASTEC Workshop in Yerevan, 3–6 October 2005.

[33] UK Government, *The Global Partnership: Progress During 2005*, p. 28.

[34] P.C. Bleek, 'Global Cleanout of Civil Nuclear Material: Toward a Comprehensive, Threat-Driven Response', *Strengthening the Global Partnership: Issue Brief No. 4* (Washington, DC: Center for Strategic and International Studies, September 2005), p. 2.

[35] C.D. Ferguson and D. Keegan, 'Security through Selfishness', *Baltimore Sun*, 8 May 2005.

[36] P.C. Bleek, *Global Cleanout: An Emerging Approach to the Civil Nuclear Material Threat* (Cambridge, MA: Harvard University Belfer Center, September 2004), p. 26.

[37] Carnegie Endowment for International Peace, *Universal Compliance: A Strategy for Nuclear Security* (Washington, DC: CEIP, March 2005), p. 40.

[38] C. Chuen, 'The Global Partnership and Submarine Dismantlement', *CNS Research Story* (Monterey, CA: Center for Nonproliferation Studies, 8 June 2004). *http://cns.miis.edu/pubs/week/040608.htm.*

[39] Ibid.

[40] Orlov et al., *Guidebook: Global Partnership*, p. 54.

[41] Bleek, 'Global Cleanout of Civil Nuclear Material', p. 8.

[42] 'Russian envoy says Nunn-Lugar program likely to be extended', Interfax, Moscow, 21 April 2006.

[43] See G. Corera, *Shopping for Bombs: Nuclear Proliferation, Global Insecurity and the Rise and Fall of the A.Q. Khan Network* (London: Hurst & Company, 2006).

[44] On 18 July 2006 the British Embassy in Moscow announced that UK Ministry of Defence 'will play a key role in building a second Chemical Weapons destruction facility' at Kizner in Russia. FCO London: Press Release, 18 July 2006.

[45] J. Mackby (rapporteur), *Strategic Study on Bioterrorism* (Washington, DC: CSIS/Swedish Institute of International Affairs, June 2006), p. 3. *http://www.sgpproject.org/bio%20studyreport14June06.pdf.*

Annex I

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Dr Ian Anthony	**Stockholm International Peace Research Institute**
Mr Paul Arkwright	**Foreign & Commonwealth Office, UK**
Mr Chris Bailey	**HTSPE Ltd, Moscow Office**
Mr Steve Bourne	**International Science and Technology Centre, Moscow**
Mr Peter Carroll	**Department of Trade and Industry, UK**
Ms Joyce Connery	**Department of Energy, US**
Mr Thomas Deters	**Department of Energy, US, Moscow Office**
Ms Katherine Dixon	**Foreign & Commonwealth Office, UK**
Mr Robert Einhorn	**Center for Strategic and International Studies, Washington, DC**
Mr Simon Evans	**Department of Trade and Industry, UK**
Mr Konstantin Evstyukhin	**International Science and Technology Centre, Moscow**
Mr Kenneth Ferguson	**Pacific Northwest National Laboratory**
Mr David Field	**RWE Nukem Ltd**
Mr Michael Fink	**Department of Energy, US**
Dr Michèle Flournoy	**Center for Strategic and International Studies, Washington, DC**
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Mr Oleg Goroshko	**Dept of Trade and Industry, British Embassy Moscow**
Dr Rose Gottemoeller	**Carnegie Moscow Center**
Mr Patrick Gray	**HTSPE Ltd, Hemel Hempstead and Moscow Office**
Ms Galina Gurova	**Ministry of Foreign Affairs, Canada**
Mr Shane Guy	**University of Cambridge**
Mr Timothy Hanley	**Department of Energy, US**
Mr James Harrison	**Ministry of Defence, UK**
Mr Trevor Hayward	**Department of Trade and Industry, UK**
Dr Alan Heyes	**Department of Trade and Industry, UK**
Ms Laura Holgate	**Nuclear Threat Initiative, Washington DC**
Mr Norbert Jousten	**International Science and Technology Centre, Moscow**
Mr Greg Kaser	**HTSPE Ltd, Hemel Hempstead**
Mr Daniil Kobyakov	**PIR Center, Moscow**
Mr Dmitry Kovchegin	**Booz Allen Hamilton Inc., Moscow**
Mr Robert Kvile	**Ministry of Foreign Affairs, Norway**
Mr Ben Ladd	**Foreign & Commonwealth Office, UK**
Mr Troy Lulashnyk	**Ministry of Foreign Affairs, Canada**
Dr Juan Matthews	**Global Watch Service**
Dr Mary-Beth Nikitin	**Center for Strategic and International Studies, Washington, DC**
Ms Rozanne Oliver	**Formerly State Department, US**
Dr Vladimir Orlov	**PIR Center, Moscow**
Mr Leo Owsiacki	**International Science and Technology Centre, Moscow**
Mr Gerald Preskey	**John Brown E&C Ltd, Moscow Office**
Mr Marty Rubinstein	**Ministry of Foreign Affairs, Canada**
Mr Scott Shrum	**International Science and Technology Centre, Moscow**
Mr Trevor Smith	**Ministry of Foreign Affairs, Canada**
Mr Vladimir Sterekhov	**Federal Agency for Atomic Energy, Russian Federation**
Mr Gerald Thomas	**Department of Energy, US**
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Dr Philip Towle	**University of Cambridge**
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Mr Alexei Vladimirsky	**Department of Energy, US, Moscow Office**
Mr Norman Watts	**Crown Agents Ltd**
Dr Bryan Wells	**Ministry of Defence, UK**

Further discussions with officials and independent experts were held during a PIR Center Conference in Moscow, 21–23 April 2006, and the G8 Global Partnership Working Group in Moscow, 5 June 2006.

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