

The UK's role in nuclear proliferation: then and now

David Lowry examines the historical role of Britain's civilian nuclear exports in the weapons programmes of countries like North Korea, and fears that the latest government initiatives will lead to history repeating itself.

The veteran Labour politician, Tony Benn, who was responsible for the British nuclear power programme in the late 1960s, was asked by The Times if he had made any political mistakes in his life. He responded: "Yes, nuclear power. I was told, when I was in charge of it, that atomic energy was cheap, safe and peaceful. It isn't."¹

Since the 1950s there has been widespread sympathy and support – by both political and scientific leaders – for nuclear power. This is despite clear evidence that the spread of civilian nuclear technologies and materials has contributed to nuclear weapons proliferation. This article looks at some examples from Britain's nuclear history, and questions why our government is, once again, ramping up its support for nuclear exports.

Atoms for Peace?

Following the detonation of the two atomic bombs over the Japan in August 1945, many nuclear scientists wanted to put their intellectual expertise to the public good, so horrified were they over the scale of destruction. One of the key focuses was the pursuit of electrical power from nuclear fission.

Just over a year after Britain first tested its own atomic bomb, US President Eisenhower delivered his infamous 'Atoms for Peace' speech to the UN General Assembly in 1953. It proposed the conversion of 'atomic swords' into 'nuclear energy ploughshares'. He stated: "It is not enough to take this weapon out of the hands of the soldiers. It must be put into the hands of those who will know how to strip its military casing and adapt it to the arts of peace."²

He proposed the creation of an international atomic energy agency, whose responsibilities would include bringing "abundant electrical energy" to "the power-starved areas of the world." This was the start of a huge promotional drive which led, in 1957, to the creation of the International Atomic Energy Agency (IAEA) as a United Nations agency in Vienna.

The UK was at the forefront of the new technology. In 1956, four 'Magnox' reactors at Calder Hall on the Sellafield site – then called Windscale – were opened

by the young Queen Elizabeth II. She announced that: "It may well prove to have been among the greatest of our contributions to human welfare that we led the way in demonstrating the peaceful uses of this new source of power."³

But the double-edged nature of this technology was all too apparent in this facility: it was designed to produce plutonium for military purposes, as well as generate electrical power.⁴

Early UK nuclear technology in Iraq, Iran and North Korea

As the IAEA was being set up, the UK made one of its first forays into international nuclear trade – with Iraq. The Baghdad Pact Nuclear Centre opened on 31 March 1957.⁵ It was part of the UK's own 'Atoms for Peace' efforts. According to a parliamentary reply by Michael Heseltine in 1992, "Iraq ceased to participate in the activities of the training centre when it was transferred to Tehran following the revolution in Iraq in 1959."⁶

In light of subsequent geo-political history in the region, that was out of the atomic frying pan, into the nuclear fire!

Around this time Britain also sold a single Magnox nuclear plant each to Japan and to Italy.⁷

There is also significant evidence that the British Magnox nuclear plant design – which, after all, was primarily built as a military plutonium production factory – provided the blueprint for the North Korean military plutonium programme based in Yongbyon. Here is what Douglas Hogg, a Conservative minister, admitted in a written parliamentary reply in 1994: "We do not know whether North Korea has drawn on plans of British reactors in the production of its own reactors. North Korea possesses a graphite moderated reactor which, while much smaller, has generic similarities to the reactors operated by British Nuclear Fuels plc. However, design information of these British reactors is not classified and has appeared in technical journals."⁸

The uranium enrichment programmes of both North Korea and Iran also have a UK connection. The blueprints of this type of plant were stolen by Pakistani scientist, A Q Khan, from the URENCO enrichment plant in The Netherlands in the early 1970s.⁹ This plant was one-third owned by the UK government. The Pakistan government subsequently sold the technology to Iran, who later exchanged it for North Korean Nodong missiles.

A technical delegation from the A Q Khan Research Labs visited North Korea in the summer of 1996. The secret enrichment plant was said to be based in caves near Kumch'ang-ni, 100 miles north of the capital, Pyongyang, where US satellite photos showed tunnel entrances being built. Hwang Jang-yop, a former aid to President Kim Il-sung (the grandfather of the current North Korean President) who defected in 1997, revealed details to Western intelligence investigators.¹⁰

So Britain's civilian nuclear export activity has involved provision of direct technical support to both Iraq and Iran, and indirectly to both North Korea and Iran. Given the subsequent nuclear weapons programmes in Iraq and North Korea, and the international concerns about the current nature of Iran's nuclear programme, this is hardly a positive record.

The UK has also been responsible for export of nuclear material from civilian plants specifically intended for weapons manufacture. Keith Barnham and other SGR colleagues demonstrated in a paper published in Nature in 2000 how military grade plutonium, created in the UK's Magnox reactors, was exported to the United States.¹¹

The NPT as a vehicle for proliferation

In 1968, the Nuclear Non Proliferation Treaty (NPT) was endorsed by the United Nations General Assembly to try to put the brakes on the further spread of nuclear weapons. The IAEA was explicitly given an enforcement role. But the treaty involved a 'grand bargain': that non-nuclear weapon states should renounce all possession of nuclear weapons in exchange for civilian nuclear assistance. Indeed, the NPT affirms nations' "inalienable right... to develop research, production and use of nuclear energy for peaceful purposes."¹² To this end, the treaty included clauses aimed at a major expansion of nuclear trade, including scientific and technological cooperation and sales of nuclear equipment and nuclear materials. The risk that this could lead to further proliferation has been downplayed by the IAEA and nuclear exporting countries ever since.

New UK nuclear exports

In the last few years, Britain's main political parties have demonstrated a deeply disturbing interest in a major expansion of the export of nuclear technology. This is despite claiming to be acutely aware of the dangers of proliferation.

In 2009, Chris Bryant, then a foreign office minister, commented during a parliamentary debate on

nuclear proliferation: "It is clearly important that we secure fissile material. One of the greatest dangers to security around the world is the possibility of rogue states or rogue organisations gaining access to fissile material."¹³

Yet, only a few days later, the Labour government published a document which, while claiming to "lay out a credible road map to further disarmament", actually proposed increasing the civilian nuclear trade across the world.¹⁴ The document was aimed at ongoing international non-proliferation negotiations.

In my judgment, whatever its laudable aims on nuclear disarmament, this document was in effect a blueprint for nuclear proliferation, undermining government aims to create a more secure world.

The Coalition government has continued to pursue this nuclear export path. In March this year, the Department for Business, Innovation and Skills (BIS) – significantly, not the Department for Energy and Climate Change – published a suite of documents promoting nuclear power development in the UK and abroad, backed with £31 million of new taxpayers' money.¹⁵

In one of the documents, Long-term Nuclear Energy Strategy, the government committed to international action, including:

- further increasing its presence and impact in international nuclear forums, "in particular those relating to nuclear R&D";
- working with "like-minded" EU nations to provide "a positive and informed political environment for the civil use of nuclear power both domestically and globally"; and
- working with embassies, industry and academia "to better showcase the UK's knowledge, expertise and facilities to the international market."¹⁶

While extra funding was being provided to promote nuclear technology, including exports, figures released to parliament this year revealed that the Coalition was simultaneously cutting the budget for nuclear non-proliferation. The 2013-14 spending will be reduced to £23.7m – a cut of £3.5m from 2012-13.¹⁷ The budget for the Capital Global Threat Reduction Programme will also fall: from £6.6m to £5.0m. The Coalition's changing priorities are all too clear.

There is the additional problem of what to do with the UK's current plutonium stockpile, created from the reprocessing of spent nuclear fuel. This currently stands at 110,000 kg.¹⁸ While this is classified as

'reactor grade' because of its high content of heavy plutonium isotopes, it is widely acknowledged – including by the Royal Society¹⁹ – that even reactor grade plutonium can be used to fabricate crude but powerful nuclear weapons. Depending on the isotopic content and the weapon design, a single nuclear bomb could be constructed with as little as 5 kg.²⁰

The government's currently preferred option for dealing with this stockpile is to convert it into MOX (mixed plutonium-uranium oxide), which could be used to fuel nuclear power stations both in the UK and abroad.²¹ But MOX fuel can be chemically separated into its constituent parts, so the proliferation risks of exporting this fuel are again all too real. Furthermore, to fabricate this MOX fuel, upwards of £1 billion, some suggest as much as £5-6 billion, of UK taxpayers' money would be needed for construction of a new manufacturing plant at Sellafield.^{22,23}

The two Cabinet ministers responsible for the UK's nuclear export strategy are Business Secretary, Vince Cable and Energy and Climate Change Secretary, Ed Davey. Ironically, both were elected in 2010 on a Liberal Democrat manifesto that opposed all nuclear power projects.

Nuclear worries

The very real risk is that the UK's promotion of nuclear power – especially the export of nuclear technologies and materials – will lead to more military stand-offs such as those with North Korea and Iran, and will further hasten the day when another mushroom cloud rises above a city with hundreds of thousands lying dead beneath it. The easiest way to minimise the risk of such attacks is stop promoting and distributing the technologies that could be used to undertake them.

Tony Benn regarded his support of nuclear power as a major political mistake – not least because of the problems of proliferation. How long will it be before the current generation of British politicians – and indeed the scientists and engineers advising them – realise they are making the same mistake?

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References

1. The Times (2010). 11 September. <http://www.thetimes.co.uk/tto/life/article2715663.ece>
2. Eisenhower D (1953). Atoms for Peace speech. http://www.iaea.org/About/atomsforpeace_speech.html
3. Atom: The Journal of British Nuclear Engineering (1956). vol.1, no.1.
4. Jay K (1956). Calder Hall. Methuen. p.80.
5. St. Petersburg Times (1957). Baghdad Nuclear Pact Center is Inaugurated. 1 April. p3. <http://news.google.com/newspapers?nid=feST4K8J0scC&dat=19570401&printsec=frontpage&hl=en>
6. Heseltine M (1992). Written parliamentary reply to Paul Flynn MP. Official Report, 14 December, vol.216, cc23-4W. <http://en.wikipedia.org/wiki/Magnox>
7. Hogg D (1994). Written parliamentary reply to Llew Smith MP. Official Report, 25 May. http://hansard.millbanksystems.com/written_answers/1994/may/25/korea#column_186w
8. Albright D (2010). Peddling Peril. Free Press, New York. pp.15-28.
9. Levy A, Scott-Clark C (2007). Deception: Pakistan, the United States, and the Global Weapons Conspiracy. Atlantic Books. p.281.
10. Barnham K, Nelson J, Stevens R (2000). Did civil reactors supply plutonium for weapons? Nature, vol.407, p.833. 19 October. <http://www.nature.com/nature/journal/v407/n6806/full/407833c0.html>
12. United Nations Office on Disarmament Affairs (1995). Treaty on the Non-Proliferation of Nuclear Weapons: Text. <http://www.un.org/disarmament/WMD/Nuclear/NPTtext.shtml>
13. Bryant C (2009). Official Report, 9 July, column 1228. <http://www.publications.parliament.uk/pa/cm200809/cmhansrd/cm090709/debtext/90709-0019.htm>
14. Cabinet Office (2009). Road to 2010: Addressing the Nuclear Question in the Twenty First Century. <http://webarchive.nationalarchives.gov.uk/20091011103259/http://cabinetoffice.gov.uk/media/224864/roadto2010.pdf>
15. BIS (2013). A Review of the Civil Nuclear R&D Landscape in the UK. <https://www.gov.uk/government/publications/civil-nuclear-research-and-development-landscape-in-the-uk-a-review>
16. BIS (2013). Long-term Nuclear Energy Strategy. p16-17. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/168047/bis-13-630-long-term-nuclear-energy-strategy.pdf
17. Hansard (2013). Official Report, 3 June, column 954W. <http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm130603/text/130603w0007.htm#13060419000045>
18. DECC (2013). Management of the UK's plutonium stocks: consultation response. <https://www.gov.uk/government/consultations/managing-our-plutonium-stocks>
19. Royal Society (2007). Strategy options for the UK's separated plutonium. Policy document 24/07. <http://royalsociety.org/policy/publications/2007/options-separated-plutonium/>
20. Town & Country Planning Association (1978). Planning and Plutonium. Evidence to 1977 Windscale Inquiry. pp.36-38.
21. As [16]
22. Royal Society (2011). Fuel cycle stewardship in a nuclear renaissance. <http://royalsociety.org/policy/projects/nuclear-non-proliferation/report/>
23. Whitehaven News (2013). Foreign plutonium to stay at Sellafield. 25 April. <http://www.whitehavennews.co.uk/news/foreign-plutonium-to-stay-at-sellafield-1.1051889?referrerPath=home>