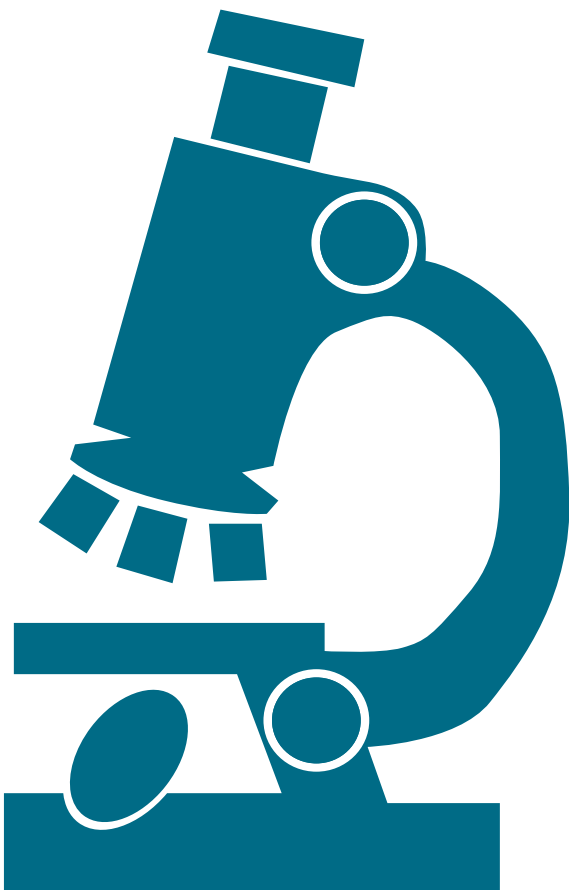




Offensive Insecurity:

The role of science and
technology in UK
security strategies

Executive Summary



SGR

*Promoting ethical
science, design
and technology*

Main findings

UK government funding of military research and development (R&D) has long been among the highest in the world. However, up to now, there has been very limited publicly available information on the key programmes that have been funded, or analysis of what alternative R&D spending patterns might provide increased security in the short and long term. This report seeks to fill these gaps, especially as the UK currently faces no conventional military threats, but increasingly faces a wider array of other security risks.

Using new data from freedom of information requests, supplemented by a range of other official data sources, we have discovered the following:

- The UK government's military R&D spending is heavily focused on offensive weapons systems. Of the spending programmes on which data was available, 76% of the funds were for technology programmes whose main role was 'offensive', i.e. aimed to be used to 'project force' far from British shores.
- During the three-year period 2008-11, the six largest areas of military R&D funded by the UK government were: combat planes; combat helicopters; long-range submarines; nuclear weapons; nuclear propulsion (for submarines); and unmanned aerial vehicles (drones).
- Savings of at least £1 billion per year could be made in public R&D spending by taking steps to move to a less aggressive – but robust – defence policy, where the development of the main offensive military technologies was cut.
- The Ministry of Defence was unable to provide a breakdown by programme of over one quarter of its R&D spending, despite repeated questioning. This undocumented funding averaged about £500 million per year. This represents a major shortcoming in accounting practices.
- We estimated that Ministry of Defence spending on R&D per year from 2008 to 2011 was approximately twice the total public R&D spending – and *seven times* the civilian government departmental R&D spending – that helps to tackle the roots of conflict. This assessment was carried out using the concept of 'sustainable security'.
- To further illustrate this imbalance, comparative examples of areas of total R&D spending over the three financial years, 2008-11 were:
 - Offensive weapons systems: £1,565m for combat aircraft; and £991m for long-range submarines (including their nuclear weapons);
 - Sustainable security: £626m for international development, and £179m for renewable energy.

In seeking to put these figures into context, the report analyses the role of science and technology in the government's evolving military and security policies. It highlights how the 2010 National Security Strategy marked a significant shift in policy, but conventional military and security thinking – with the emphasis on Britain retaining a major offensive weapons capability for war-fighting overseas – is still limiting the use of science and technology in playing a much more constructive role in helping to prevent conflict and provide better security in the short and long term. The report assesses how this could be changed to bring about greater security – both for the UK and internationally.

UK military policy and R&D spending

According to official statistics, the Ministry of Defence spent on average £1.8bn per year on research and development in the three-year period, 2008-11. While this was significantly less than Cold War budgets, it still represented more than one-sixth of UK public spending on R&D – a fraction that is about three times higher than that of the major industrial nations of Germany and Japan. The main reason for such a high spend is the UK's continued focus on the development of major offensive weapons such as combat aircraft, long-range submarines and nuclear weapons.

The 2010 National Security Strategy (NSS) acknowledged that the UK's security was dependent on a much wider range of factors than just conventional military threats and that actions to tackle such problems would need to take account of the root causes of security problems, including wider social and environmental factors. Indeed, the risk of a conventional military attack on the UK was classified at the lowest level – 'Tier Three' – of the new risk hierarchy.

Nevertheless, the Strategic Defence and Security Review (SDSR) – released in tandem with the NSS – made it clear that, while cuts to some major military technology systems were to be undertaken to help the government's budget deficit, a main military task would continue to be "defending our interests by projecting power". This was despite the major failings of recent 'military intervention' involving UK forces – especially the very large numbers of civilian casualties and huge refugee crises in Iraq and Afghanistan, and the way in which such consequences can and are used for recruitment by terrorist groups.

Also apparent was the short time-horizon considered, especially in the SDSR. A longer-term view of security risks would lead to greater emphasis being placed on preventative action.

The 'projecting power' perspective was also the backbone of the recent *National Security Through Technology* white paper. This document was almost entirely focused on the development of new military technologies and the industries that would work with the government to provide them. It strongly supported the export of arms and other military technologies to try to help lower the costs to the UK government of procuring new equipment. This policy remained, despite the way that arms exports repeatedly fuel insecurity and oppression overseas. Scientific research and technological development to help understand and tackle wider security problems were virtually ignored in this major policy document.

Analysing new military R&D data

For this report, we obtained new data from the Ministry of Defence on its R&D programmes using freedom of information requests. This data provided a breakdown by technology programme of approximately £1.3bn per year of MoD R&D spending for the three-year period, 2008-11. This data is summarised as follows.

Table A shows the MoD's R&D spending for its top six technology areas over the three year period. All six technology areas are an integral part of the military capability to 'project force' over long range.

Based on policy analysis of military technologies and force structures – taking into account concepts such as 'non-offensive defence' – we classified the £1.3bn per year of documented military R&D spending from 2008-11 into three categories: offensive; defensive; and general. This analysis concluded that approximately 76% was spent on offensive systems (including sub-systems). Only 24% was spent on systems

Table A. Total Ministry of Defence R&D spending on the top six military technology areas for the three year period, 2008-11 (cash terms)

Military technology area	Total R&D spending, 2008-11 (£m)
Combat planes (including Typhoon/Eurofighter, Joint Combat Aircraft/F-35, Tornado)	771
Combat helicopters (including Lynx, Apache, Merlin)	599
Long-range submarines (hunter-killer and nuclear-armed)	392
Nuclear weapons (carried by submarines)	317
Nuclear propulsion (for submarines)	282
Unmanned aerial systems (drones)	195

whose main application could be said to be defensive or general. This analysis demonstrates that the development of military technologies with an offensive, long-range capability dominates the MoD's R&D priorities. Also disturbing was the fact that gaps in the figures meant that spending averaging about £500m a year was not documented at a programme level. (For comparison with R&D spending that helps to tackle the roots of insecurity – see next section – we have assumed that these undocumented funds are spent on offensive, defensive and general systems in the same proportions as the rest of the budget.)

The data we have obtained highlights that, while media portrayals of military R&D often focus on the life-saving dimension of such work – for example, trauma medicine – the reality is that the main programmes are overwhelmingly focused on developing offensive weapons systems.

Considering the alternatives

Given the failings of the UK's current military and foreign policy, a key focus of this study has been to estimate the R&D spending that helps to understand and tackle the root causes of insecurity. In compiling this estimate, we used the concept of 'sustainable security', which identifies four main long-term drivers of insecurity: climate change; competition for resources; global militarisation (including the arms trade); and the marginalisation of the majority world (including international poverty and social inequality).

We examined public R&D spending by civilian government departments and the seven research councils that made a significant contribution in these areas for the three-year period, 2008-11. The data sources we used were official online databases of R&D projects and other government sources. Within these totals, we included R&D spending on a wide range of activities, including international development and poverty alleviation, climate change impacts, sustainable energy technologies, food security, international relations, natural resource management, biodiversity, environmental risks and hazards, sustainable consumption and other measures to mitigate and adapt to climate change. The average annual total spending during the three-year period was £961m.

Despite including a very broad range of public R&D within our classification, the total spending related to sustainable security is still only equivalent to about half of the government's annual military R&D spending during this period, as shown in Figure A. This Figure also shows the breakdown of annual military R&D spending according to the three classifications – offensive, defensive and general – discussed above. This again demonstrates the dominance of traditional military approaches – especially offensive weapons systems – within public funding of security-related R&D in the UK.

It should also be noted that all the military R&D spending comes directly from a single government department (the MoD) with strong ties to central government decision-making, whereas most of the sustainable security R&D funding (74%) is spent by research councils, and does not have such a strong link with policy decisions (also shown in Figure A). If we compare only the annual R&D spending that comes *directly* from government departments, we find the military spending is *seven* times larger than that related to sustainable security.

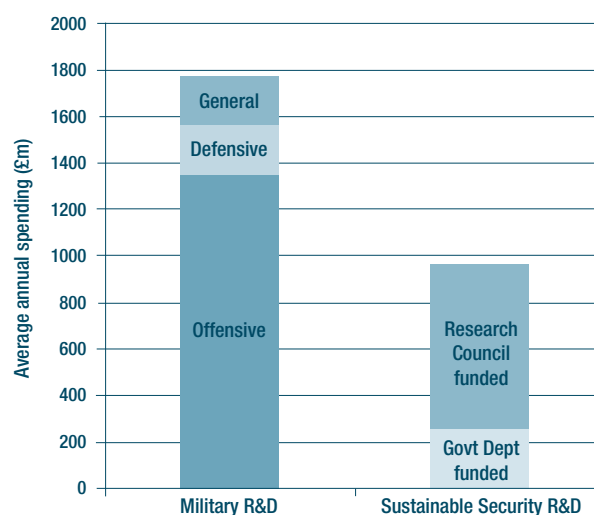
By moving to a less aggressive defence policy, funding for the development of major offensive weapons systems can be cut substantially. Our analysis concludes that savings of at least £1 billion per year could be made in public R&D spending by taking such steps. Some of these savings could be redirected to R&D that contributes to sustainable security.

Data gaps and misinterpretations

Also of major concern is the lack of clarity over some of the MoD's R&D spending. This undermines public accountability and muddies policy discussions. As mentioned, our analysis reveals annual spending of about £500m within the MoD's figures undocumented at the programme level – a total of £1,497m over the three-year period of our assessment. Also problematic is the MoD's use of ill-defined terms when discussing desirable levels of R&D spending in its white paper, *National Security Through Technology*.

We also encountered problems accessing reliable R&D spending data from the Home Office.

Figure A. Comparison of average annual UK public spending on military R&D and sustainable security R&D, 2008-11 (cash terms)



Military R&D is broken down by application; sustainable security R&D is broken down by funding source (see text).

Military R&D and economic issues

Military R&D spending – in common with military spending more broadly – is often argued to be beneficial for employment and the wider economy. As part of our investigation, we looked especially at evidence from studies by academics and independent think-tanks on this issue.

We found very little evidence to justify military R&D spending on economic grounds. Studies concluded that:

- public funding of military R&D can crowd out civilian R&D;
- civilian R&D, with its greater openness and flexibility, often leads to more innovation;
- military R&D in industry is falling relative to civilian R&D in the UK;
- employment in military R&D is falling relative to civilian R&D in the UK; and
- job creation per unit of investment is generally greater across civilian industries than within military industries.

Indeed, while employment in the military industrial sector in the UK is falling, other industrial sectors – especially environmental industries, which make a very important contribution to sustainable security – are growing. UK employment in the latter is now much greater than the former.

Conclusions and Recommendations

Against a background of continuing high levels of UK government spending on military R&D, we have presented new data in this study that clearly demonstrates that the main focus of such R&D is on offensive weapons systems. This continues to be driven by government policies to “defend our interests by projecting power” – despite major failings in this approach, despite the UK facing no current conventional military threat, and despite a growing recognition that other approaches to insecurity need to be prioritised.

We have also found major gaps in data on military R&D that need to be addressed.

We have also analysed public R&D spending on helping to understand and tackle the roots of insecurity – guided by the concept of sustainable security. While we have found significant spending on such R&D, this

spending is still considerably less than that on military R&D, and has much weaker links to policy-making on security issues. We strongly believe that this spending needs to be markedly increased, and much more effort needs to be directed to using this R&D in security policy.

Consequently, our recommendations include the following:

UK military policy and R&D

1. The government should markedly reduce military funding of R&D as part of broader policy reform, which, at its heart, should include ending the widespread deployment and export of offensive weapons systems. R&D budgets for developing key offensive weapons systems such as nuclear weapons, long-range combat aircraft, aircraft carriers and long-range submarines should be reduced to (or maintained at) zero. The critical areas where MoD funding of R&D should be increased are in work that directly contributes to arms control and disarmament, especially in areas such as nuclear weapons and emerging military technologies.
2. Savings in MoD R&D spending should be used in part to increase R&D expenditure that contributes to peace-building and the understanding and tackling of threats to sustainable security. Large increases in spending on R&D for renewable energy, energy conservation, and non-violent conflict resolution should be priorities, given their wide security and other benefits (including job creation). Careful consideration should also be given to ensuring security policies take due account of academic research, especially in environmental disciplines.

Assessing the adequacy of security-related R&D, including openness and accountability issues

3. The Ministry of Defence should maintain and publish complete programme level records of all its R&D spending. It should also be more specific when discussing levels of R&D spending in policy documents, avoiding ill-defined terms.
4. The National Security Council should commission regular, in-depth surveys of publicly funded R&D directly relevant to security. This should include military R&D and R&D that is directly relevant to broader policy concepts such as sustainable security. Within this should be an assessment of weaknesses across the security-related R&D landscape in the UK.

This executive summary and the main report were published by Scientists for Global Responsibility (SGR) in September 2013.

The main report can be downloaded from the SGR website or printed copies can be ordered from SGR.

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