7. EngineeringUK

7.1 Aims and policies

EngineeringUK is not a professional membership body. However, it is mainly funded from the fees collected from professional engineering institutions – which make up about 70% of its total income [1] [2] – and is closely related to the Engineering Council, which sets the standards for the profession. Hence it has been included as a case study in this report.

After a review due to concerns about the internal organisation of the Engineering Council, this body was split, in 2002, into the Engineering Technology Board – now known as EngineeringUK – and the Engineering Council UK – now just the Engineering Council. [3]

The main role of EngineeringUK is the promotion of engineering, especially to young people. There remain strong links between it and the Engineering Council, for example, through their financing, trustees and sharing of resources. [4]

Statement of purpose and values

The objectives, goals, vision and values of EngineeringUK [1] are as follows.

> *"Objectives*
> *1. To promote for the public benefit the art and science of engineering in all its applications in the context of modern technology; and*
> *2. To advance education in engineering and technology."*
>
> *"Goals*
> - *To improve the perception of engineers and engineering*
> - *To improve the supply of engineers"*
>
> *"Vision*
> *That the UK should be a place where the value of engineering is understood and appreciated and where the career opportunities for individuals within engineering are evident whether they are still at school or preparing to re-skill in later life."*
>
> *"Values*
> - *Passionate – We are passionate about inspiring a new generation of engineers and making a positive difference to young people's lives.*
> - *Insightful — Everything we do is based on clear and up-to-date evidence, gained by listening to and learning from our community. We are open and honest with our insights and use them to inspire young people into engineering.*
> - *Inclusive —We work with others to maximise collective impact. We value diversity and we target our promotion of science, technology, engineering and maths (STEM) to encourage a more diverse engineering community."*

Environmental policy

From the information published on its website or in its annual reports, we could find no evidence that EngineeringUK has an environmental policy.

7.2 Investments

Size and location of funds

EngineeringUK had investments of approximately £1.2 million, according to a recent annual report, all of it held by the Sarasin Alpha CIF for Endowments. [1] The top 10 holdings of this fund at the time of writing are given in table 7.1, based on data listed publicly on the asset management company's website.

Sarasin Alpha CIF for Endowments – assets / details	*% of total investments*
HSBC Holdings plc	2.1
Royal Dutch Shell plc [F][a] / B SHS	**2.1**
Source Physical Hold P-ETC	2.0
Sarasin IE / Global Real Estate Equity (GBP) I Inc	2.0
GlaxoSmithKline plc	1.5
Prudential plc	1.4
Unilever plc	1.4
BP plc [F]	**1.3**
CF Morant Wright Nippon / YLD-BL	1.3
Total SA [F]	**1.2**
Total	*16.1*

Table 7.1 – Top 10 investments held by EngineeringUK [5]

In summary, we were able to gather data on approximately 16% of EngineeringUK's investments. Of that, 29% was invested in companies which were part of the fossil fuel sector and none invested in the arms industry. However, it was difficult to draw conclusions about whether this level was representative of all the investments held in the arms sector, as these corporations tend to be smaller than those in other key sectors, such as energy, finance or communications, and hence do not appear so frequently in lists of 'top' assets.

General investment policy

EngineeringUK's approach to investments was stated [1] in a recent annual report:

> *"There are no restrictions on the Charity's power to invest, and the investment return required by our investment policy is that we should achieve inflation (CPI) +4% over the long term (5 years +). Investments are allocated to specific funds within agreed asset allocation ranges, and their performance is regularly reviewed against appropriate benchmarks."*

[a] [A] indicates companies which, in this report, are categorised as being part of the arms industry. [F] indicates companies which, in this report, are categorised as being part of the fossil fuel industry.

Ethical investment policy

From the published accounts, we found no evidence of an ethical investment policy. The organisation did not respond to our inquiry about such a policy.

7.3 School education programmes

As stated earlier, the goals of EngineeringUK are "to improve the supply of engineers" and "to improve the perception of engineers and engineering". As such, the one of the main activities of the organisation is to promote engineering to school-aged children. To this end, it runs two main programmes – The Big Bang Fair and Tomorrow's Engineers – each with its own smaller programmes. Within The Big Bang Fair, there is The Big Bang Fair Near Me, and within Tomorrow's Engineers, there is Energy Quest, Robotics Challenge and Tomorrow's Engineers Week.

The Big Bang Fair

The Big Bang Fair (BBF) is EngineeringUK's flagship event which "welcomed 80,000 people, including more than 62,000 young people" in 2019. [6] Alongside the BBF, which is held annually in Birmingham, there are also several 'The Big Bang Near Me' events. These are regional and local events organised by schools and other education providers. [7]

The BBF has a large number of sponsors. For the 2016 event, the cost for business packages ranged from £20,000 to £120,000, [8] but we were unable to find a full break down or any figures for subsequent years. For 2015/16, BBF sponsorship amounted to £1,121,000 or 11% of EngineeringUK's income. [1] Sponsors and other supporters for the 2019 event are listed in table 7.2. Out of the 70 organisations listed, 14 (or 20%) were part of the arms industry or military sectors while two (3%) were part of the fossil fuel industry. Importantly, BAE Systems was the lead sponsor, so we estimate that it alone would have contributed over 10% of sponsorship income, while arms and fossil fuel corporations made up 4 out of 7 (57%) of the top two sponsorship categories. We also carried out a similar analysis of the event's 2017 sponsors, and estimated proportions to be comparable.

The Big Bang Fair has received a significant amount of criticism both for the prominent involvement of arms, fossil fuel and other controversial corporations, as well as for some of its representation of science and engineering applications. [9] [10] [11] [12] One particularly troubling aspect has been the decision to have BAE Systems as the sole lead sponsor for every year since the fair was inaugurated. BAE is the largest arms company outside the USA, and has been widely criticised for involvement in arms sales to governments with poor human rights records (especially Saudi Arabia), nuclear weapons technologies, and the development of robotic weapons (see section 2.3 of the main report and appendix 21), so it seems a poor choice for such close collaboration in child-centred work. Indeed, the irony of having an arms company with such a prominent role in the Big Bang Fair, given the event's title, is striking. If the joke was intentional, it is in very poor taste.

Type	*Organisation*
Partnership	Royal Academy of Engineering
Supported by	Gatsby, Helsington Foundation
Lead Sponsor	**BAE Systems [A]**
Major Sponsors	GSK, National Geographic, **Rolls-Royce [A]**, **Shell [F]**, Siemens, **Thales [A]**
Corporate Sponsors	Air Products, Atkins, **Babcock [A]**, **Collins Aerospace [A]**, **Dassault Systemes [A]**, EDF Energy, JCB, **Leonardo [A]**, National Grid, RS, Sellafield, Syngenta, **Tata [F]**, Virgin Media, Zeiss
Education Sponsors	Archer, Aston University, Birmingham City University, Staffordshire University, **Welbeck Defence College**[b] **[A]**
Key Supporters	**British Army**[c] **[A]**, City & Guilds, **MOD DE&S**[c] **[A]**, Drax, Environment Agency, Future Water Association, Highways England, HS2, IET, Meccano, **Meggit [A]**, Network Rail, Health Careers, **Royal Air Force**[c] **[A]**, **Raytheon [A]**, **Royal Navy**[c] **[A]**, Specsavers, Faraday Institution
'generous support from'	Amey, DK, Harper Adams University, HEART Outreach, Institute of Mathematics and its Applications, Institution of Railway Operators, Intellectual Property Office, London North Eastern Railway, Loughborough University, Makeblock, National Centre for Universities and Business (NCUB), National Physical Laboratory, National Training Academy for Rail, National Theatre, NMiTE, Public Health England, Rail Delivery Group, Rotary Technology Tournaments, The Royal Entomological Society, University of Kent, WaterAid, Worshipful Company of Scientific Instrument Makers, Women in Engineering Student Society from the University of Sheffield

Table 7.2 – Sponsors and supporters of The Big Bang Fair 2019 [13]

Tomorrow's Engineers

Tomorrow's Engineers is a "programme of co-ordinated schools outreach and careers inspiration, led by the engineering community." [14] In 2018, it listed a number of 'business and industry partners' as shown in table 7.3, but this list has since been removed from the website.

[b] The armed forces, MOD DE&S (Defence Equipment and Support), and Welbeck Defence Sixth Form College are obviously not arms corporations. However, they work closely which these companies, and the ethical issues raised by their work are generally similar. More discussion can be found in the main report and appendix 21

Type	*Organisation*
'In partnership with'	**Shell [F]**, Institution of Civil Engineers, Motorola Solutions Foundation, Institution of Mechanical Engineers, The Goldsmiths Company, Pearson Education, STEMNET, Institution of Engineering and Technology, Greenpower, National Schools Partnership, Primary Engineer, **E.ON [F]**, Jaguar Landrover, Engineering In Motion
Regional Project Partners	**Rolls-Royce [A]**, **Airbus [A]**, National Grid, Electricity Northwest, **BAE Systems [A]**, Severn Trent, EDF Energy, National Nuclear Laboratory

Table 7.3 – Business and industry partners of Tomorrow's Engineers [15]

There was a significant presence of the industries of interest to this study, with 14% of the organisations listed being arms companies and 9% being part of the fossil fuel industry.

Energy Quest is a smaller programme within Tomorrow's Engineers, which at the time of writing, consisted of two parts. The first part was the 'Energiser' workshops run within schools to provide "hands-on activities, careers information and stories from real engineers working in energy." [16] The second part was 'The Bright Ideas Challenge', a competition to "imagine… how cities of the future might be powered." [17] The programme has received major funding from **Shell [F]** which, according to its website, "has invested an additional £1million in the Tomorrow's Engineers Energy Quest, which helps students explore the science and maths curriculum in a fun and engaging way". [17] It is notable that we could not find any mention of Shell's funding of this programme on Energy Quest web-page [16] or indeed anywhere else on the Tomorrow's Engineers website.

Another smaller programme within Tomorrow's Engineers is the *Robotics Challenge*. At the time of writing, this was aimed at students aged 11 to 14 and their task was to build autonomous LEGO robots with the aim of completing a number of 'aviation missions'. The organisations involved in this programme are listed in table 7.4.

Type	*Organisation*
'Led by'	EngineeringUK, Helsington Foundation
'In partnership with'	**Royal Air Force[c] [A]**, **Rolls-Royce [A]**
'Supported by'	**Airbus [A]**, REECE Foundation

Table 7.4 – Organisations leading or sponsoring the Robotics Challenge [18]

Out of the five organisations working with EngineeringUK on the Robotics Challenge, two were arms companies and one was part of the UK armed forces,[c] i.e. 60% of the partners of the project were from the arms/ military sectors.

Tomorrow's Engineers Week publicises engineering careers to young people. Its aim is to promote what engineers do and show "the range of jobs available in the industry". There is a range of activities, worksheets and careers presentations/resources. The 'week' itself does

[c] See note b.

not appear to take additional sponsorship beyond that for the main programme, although it does provide a wide range of online teaching resources from external organisations. Among these, we did find one produced by the arms company, **Airbus Military [A]**. [19] However, there were numerous other resources without such connections.

Concluding comments

In summary, we found that the sectors of concern to this study had a high level of involvement with EngineeringUK's work with young people. Across the different education programmes discussed in this section, approximately 20% of the organisations were part of the arms and military sectors while about 6% were involved in the fossil fuel industry. Furthermore, the sponsors providing the largest amounts of funding for these programmes – for example, BAE Systems for The Big Bang Fair and Shell for Tomorrow's Engineers Energy Quest – lead to the conclusion that the financial influence of the arms and fossil fuel industries is markedly greater than that indicated by the simple number of organisations involved.

7.4 Events and sponsorship

EngineeringUK's sponsored events have been covered in the previous section.

7.5 Corporate membership

EngineeringUK has a large number of corporate members. [20] At the time of writing, these were: **Airbus Group [A]**, **Anglo American [F]**, ARM, Atkins, City & Guilds, Cummins, Drax, **E.ON [F]**, EDF Energy, GSK, Heathrow, HS2, **Jacobs [A]**, Jaguar Land Rover, **Leonardo [A]**, Matchtech, National Grid, National Instruments, NATS, Network Rail, Nuclear Industry Association, National Nuclear Laboratory, North East Automotive Alliance, National Skills Academy (Nuclear), OCR, Pearson, **Ricardo [A]**, **Rolls-Royce [A]**, Schneider Electric, Sellafield, **Shell [F]**, Siemens, Stantec, **Thales [A]**, Tideway, Transport for London, UK Power Networks, and **Ultra Electronics [A].**

Out of the 38 organisations, seven (18%) were part of the arms industry and three (8%) were fossil fuel corporations. For the year 2017/18, EngineeringUK received £285,000 from corporate membership, [2] implying it received over £51,000 from arms corporations and nearly £23,000 from the fossil fuel sector via this income stream.

7.6 Other corporate links

EngineeringUK publishes the annual *State of Engineering* report. The report lists numerous 'contributors', which include professional engineering institutions, corporations and other organisations. Of the 30 listed for the 2018 report, four (13%) were arms corporations and two (7%) were fossil fuel companies. [21] The financial relationship of the contributors to the report is not specified.

7.7 Overall assessment

Reviewing the information in this case study, we have given EngineeringUK the assessment as shown in tables 7.5a and b.

In terms of transparency, while EngineeringUK provided a significant amount of information on its corporate links in its publicly available documents, it fell short in some key areas. Most importantly, given the large number of arms and fossil fuel organisations involved in EngineeringUK's activities, coupled with the prominent involvement of a few of them in key funding positions in The Big Bang Fair and Tomorrow's Engineers, we would expect more openness on the levels of funding provided by these interests. It is encouraging that the organisation did publicly disclose the funds in which all its investments were held, but unfortunately this still led to only 16% of the corporations in which it was invested being revealed. Fund managers across the whole investment sector need to be more open. Finally, EngineeringUK did not respond to our inquiry about investment policies and practices.

We found no evidence of environmental or ethical investment policies followed by EngineeringUK.

	Investments	*School education programmes*	*Events*	*Other*
Involvement with arms corporations	Medium	Very high	Very high[1]	High
Involvement with fossil fuel corporations	Very high	High	High[1]	Medium

Table 7.5a – Corporate involvement ratings for EngineeringUK

[1] This overlaps with school education programmes

	Ethical issues covered in this study
Positives	• Significant amounts of publicly available information on some corporate links
Negatives	• No environmental policy • No ethical investment policy • Very high levels of financial links between its school education programmes and arms corporations and other military organisations • High levels of financial links between its school education programmes and fossil fuel corporations • Significant financial links with fossil fuel and arms sectors in other areas of its work • Significant gaps in publicly available information on corporate links

Table 7.5b – Positives and negatives for EngineeringUK

Regarding financial links between EngineeringUK and the arms industry and other military organisations, it was clear from the information available that these were extensive. As a

proportion of external organisations involved in its school education programmes, corporate membership scheme and other links, military sector involvement was around the 20% level. In terms of the funding of its school education programmes, the available information indicated a markedly higher proportion. Such levels are far above the proportion of engineering employees that work in the UK arms industry (see section 2.3 and chapter 3 of the main report), even setting aside the ethical issues. In terms of investments, while we were unable to find direct evidence of links to arms corporations, the lack of an ethical investment policy, coupled with the low proportion of investments on which public data was available (16%), meant that these links were highly likely.

Regarding financial links between EngineeringUK and the fossil fuel industry, it was again clear that these were significant. From the publicly available information, we found that the proportion of fossil fuel corporations involved in its school education programmes, corporate membership scheme, and other links was between 5% and 10%. As in the case for the arms sector, the available financial data indicated that the proportion of funding for school education programmes to be markedly higher than this level. In terms of investments, the available data showed that 29% of assets were invested in the fossil fuel industry. All these levels were all markedly higher than the proportion of engineers who work in the UK fossil fuel industry (see sections 2.2 and chapter 3 of the main report).

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