

16. Royal Academy of Engineering

16.1 Aims and policies

The Royal Academy of Engineering is the UK's national academy for engineering. It has around 1,600 fellows. [1] Unlike most other professional institutions, membership fees are not a source of income. Its main source of finance is actually in the form of grants from the UK government, which make up about 60% of its income. [2]

Statement of purpose and values

The academy's purpose and activities are summarised on its website [3] as follows.

"As the UK's national academy for engineering, we bring together the most successful and talented engineers from across the engineering sectors for a shared purpose: to advance and promote excellence in engineering.

We provide analysis and policy support to promote the UK's role as a great place to do business. We take a lead on engineering education and we invest in the UK's world-class research base to underpin innovation. We work to improve public awareness and understanding of engineering."

For the period 2015 to 2020, the academy's work is driven by 'four strategic challenges', [3] which are as follows.

"1. Make the UK the leading nation for engineering innovation

Supporting the development of successful engineering innovation and businesses in the UK in order to create wealth, employment and benefit for the nation.

2. Address the engineering skills crisis

Meeting the UK's needs by inspiring a generation of young people from all backgrounds and equipping them with the high quality skills they need for a rewarding career in engineering.

3. Position engineering at the heart of society

Improving public awareness and recognition of the crucial role of engineers everywhere.

4. Lead the profession

Harnessing the expertise, energy and capacity of the profession to provide strategic direction for engineering and collaborate on solutions to engineering grand challenges."

Environmental policy

The academy deals with environmental issues related to engineering in a number of ways. In collaboration with the Engineering Council, it has created a 'Statement of Ethical Principles' [4] which it encourages all engineers to follow. One of these principles is *"Respect for life, law, the environment and public good"*, three of whose sub-clauses specifically relate to environmental issues:

- *"protect, and where possible improve, the quality of built and natural environments;*

- *maximise the public good and minimise both actual and potential adverse effects for their own and succeeding generations;*
- *take due account of the limited availability of natural resources.”*

The academy has also published numerous reports examining how engineering could help tackle challenges related to energy, climate change and the environment [5] and broader issues of sustainability. [6]

However, we were not able to find a specific environmental policy covering the organisation’s own activities among its publicly available materials.

16.2 Investments

Size and location of funds

The Royal Academy of Engineering had investments worth nearly £41 million, according to a recent annual report and accounts. [7] Table 16.1 gives a limited breakdown of this total, using the publicly available data.

<i>Asset category</i>	<i>Amount in asset category (£m)</i>
UK equities	37.2
UK bonds	3.7
<i>Total</i>	<i>40.9</i>

Table 16.1 – Investments held by the Royal Academy of Engineering [7]

The only further relevant detail provided in these accounts was that there were two stock holdings representing more than 5% of the general portfolio: Dechra Pharmaceuticals (worth approximately £1.5m); and Univer plc (£1.1m). Together, these amounted to 6.4% of the academy’s total investments. [7] We also note that in the latest set of accounts published at the time of writing, [8] this percentage of ‘known’ investments had fallen to zero.

In summary, we were able to uncover information on, at most, approximately 6% of the academy’s investments. Of these known investments, none were invested in companies involved in the fossil fuels or arms industries. However, we think this is too limited a sample to draw wider conclusions about the rest of the academy’s investments.

Investment policies

The academy’s annual reports and website provide little information on its investment policies, including questions of ethics. However, the organisation did respond to our letter on these issues as follows. [9]

“The Royal Academy of Engineering and its subsidiaries use a number of investment managers to manage their investments, currently OLIM Investment Managers and Investec Wealth & Investment Limited. There are a number of criteria that the Academy

uses to select its investment managers and one of criteria is their ethical investment policies. The ethical investment policies of investment managers are available on their websites.

The Academy represents a broad spectrum and it is difficult to represent all the views of the Fellows, but our investment managers are encouraged to invest in a responsible manner. Our Finance Committee and Trustees reserve the right to exclude companies that carry out activities contrary to our aims or from holding investments which damage the Charity's reputation. Royal Academy of Engineering investments are held in a general fund portfolio and a designated charity income portfolio. The Queen Elizabeth Prize for Engineering Foundation's investments are held in a managed investment fund. To reduce costs, investment managers of the Queen Elizabeth Prize Foundation invest largely through exchange traded funds and are not able to influence the policy of these funds."

Hence, it appears that the academy does not have a specific ethical investment policy, relying instead on those of its investment managers. We looked up the policies of OLIM Investment Managers and Investec Wealth & Investment Limited. We were unable to find information on the ethical investment policy of Investec. However, OLIM Investment Managers stated that:

"We have no formal ethical restrictions but we would never invest in tobacco or gambling companies for Charity Value and Income Fund. We would not invest in companies whose stated business is involved in armaments. It is our practice to favour companies with socially responsible policies towards its customers, suppliers, employees and the environment." [10]

While such restrictions may be a positive step, a number of OLIM's funds had large investments in companies which were part of the fossil fuel industry, for example, BP and Shell. [11]

We also note that the academy's letter did not reveal the proportions of the investments managed by each fund manager, so the extent to which the arms industry was excluded from the total portfolio remained unclear.

16.3 School education programmes

The Royal Academy of Engineering supports numerous activities and produces a wide range of resources aimed at school-age children. A summary of the main programmes is given in this section, with tables 16.2a-d listing the sponsors/ funders and other partners, as well as other key information.

The 13 main school education programmes run by the academy in recent years – including in-school activities and downloadable teaching resources – are summarised in tables 16.2a-c.^a The high involvement of arms and fossil fuel corporations is striking.

^a All were listed on its website at the time of writing.

<i>Programme/ project</i>	<i>Description</i>	<i>Involvement type</i>	<i>External organisations</i>
London Engineering Project (LEP) [12]	Developed and ran engineering activities in London schools to “inspire young students in science, technology, engineering and mathematics (STEM) subjects and STEM careers”	Funding from	Higher Education Funding Council of England; EDF Energy
		Other partners	African-Caribbean Network for Science and Technology; Brightside Trust; British Science Association; Cambridge-MIT Institute; Engineering Professors’ Council; Higher Education Academy Engineering Subject Centre; RWE Thames Water; STEMNET; Smallpeice Trust; Transport for London; Tubelines; UK Resource Centre for Women in SET; Young Engineers; and four London universities
Barrow Engineering Project [13]	Ran education activities in schools in Barrow-in-Furness, Cumbria, to promote careers in engineering (building on LEP above)	Funding from	Garfield Weston Foundation, Sir John Fisher Foundation [13]
		Involving	Local colleges, and 31 employers including BAE Systems Submarine Solutions [A]^b , Siemens and Vattenfall
Stoke Engineering Project [14]	Similar in scope to Barrow Engineering Project, but in Stoke-on-Trent	Funded from	Unknown
		Partnership	Local colleges and employers
Welsh Valleys Engineering Project [15]	Similar in scope to Barrow Engineering Project, but in South Wales	Supported by	Panasonic Trust
		Partnership	Local colleges, universities, employers, government
Connecting STEM Teachers [16]	Created a national network of support for teachers across all STEM subjects	Generous support from	Shell [F] , Helsington Foundation, Petrofac [F] , Boeing UK [A] , BG Group [F] [16] [8]
This is Engineering [17]	Aimed at changing the perception of engineering among children aged 13-18	Partners (five categories)	EngineeringUK, BAE Systems [A] , National Grid, Anglo American [F] , BP [F] , Centrica [F] , Rolls-Royce [A] , Siemens, Shell [F] , BT, Mott MacDonald, WSP
Engineering in high-performing schools [18]	Promoted engineering to children at high-performing schools	Donation from	John Hornibrook OBE FREng

Table 16.2a – Education projects/ programmes run with schools and teachers by the Royal Academy of Engineering, 2005-18

^b [A] indicates companies which, in this report, are categorised as being part of the arms industry. Branches of the armed forces are included in this category as the ethical issues raised by their involvement are similar (for more details, see the main report). [F] indicates companies which are categorised as being part of the fossil fuel industry.

<i>Programme/ project</i>	<i>Description</i>	<i>Involvement type</i>	<i>External organisations</i>
Engineering Engagement Programme [19] [20]	Helped “teachers and pupils realise the significance of engineering to their everyday lives”	Funded by	BAE Systems [A]
Engineering in a Box (Wales) [21]	Disseminated bi-lingual versions of resources produced for ‘Engineering Engagement Programme’ to Welsh schools	Funding from	Welsh Government
		Branding	BAE Systems [A]
Resources to Enrich STEM Curriculum [22]	Over 60 teaching resources providing “longer learning activities” for children aged 11-14	Partnership	Tomorrow’s Engineers
		Supported by	BAE Systems [A]
RAF100: Aiming for Awesome [23]	10 teaching resources created to mark centenary of RAF [A] for pupils aged 7-14	Funded by	“the Chancellor using LIBOR funds”
Support Resources [24]	Teaching resources covering “themes in engineering education such as ‘diversity in engineering’, ‘the engineering message’ and ‘routes into engineering’”	Created in partnership with	STEMNET
		Generously supported by	BAE Systems [A]
After School Resources	<i>See table 16.c</i>		

Table 16.2b – Teaching resources published by the Royal Academy of Engineering

Particularly disturbing was the funding by **BAE Systems [A]** of most of the teaching resources. 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.

It was also concerning to see an entire project – RAF100 – devoted to engineering related to a branch of the armed forces. This project’s strapline – ‘Aiming for Awesome’ – seemed especially insensitive to victims of war. While it was positive that none of the teaching materials included case studies on weapons engineering, the exclusion of, for example, any ethical discussion in teaching resources about military planes or drones regarding their use in warfare risks giving the impression that there are no ethical issues to be considered. It is hard to see this as a balanced approach to education in this area.

We were also troubled by the organisational links of the academy’s ‘After School Club Resources’. [25] These are aimed at children, aged 11 to 14 (key stage 3). Table 16.2c summarises the external organisations involved in producing these resources. Out of a total of 17 resources, 16 involved **BAE Systems [A]**, three involved the **RAF [A]** and two involved the **Royal Navy [A]**. The type of involvement varied across the resources, with no clear explanation given for the different terms used.

	<i>'in partnership with'</i>	<i>'supported by'</i>	<i>other branding^a</i>	<i>proportion of total</i>
BAE Systems [A]		12	4	94%
Tomorrow's Engineers ^c	7			41%
STEMNET	6			35%
RAF [A]			3	18%
Royal Navy [A]			2	12%

Table 16.2c – Supporters of After School Club Resources [25]

While, encouragingly, some of the teaching materials are focused on environmental or humanitarian applications of engineering, we were struck by the absence of discussion of ethical issues related to military uses, given who most of the main funders were. For example, one of the 'Resources to Enrich the STEM Curriculum' was entitled 'Drone: friend or foe?' [26] and was 'supported' and branded by BAE Systems. The introduction to the resource stated that it was "aimed at dispelling the myth [drones] are just weapons or toys. In fact they have wider ranging practical civil, humanitarian and commercial applications." While this may be true, it completely dodged the ethical issues related to the military applications being developed by the 'supporter'.

The academy also partners EngineeringUK in the organisation of The Big Bang Fair, the UK's largest science and engineering event aimed at young people. [27] This event features high profile sponsorship by arms and fossil fuel corporations, and is discussed separately in appendix 7.

<i>Project/ programme</i>	<i>Total funding (£)</i>	<i>Funders</i>
Connecting STEM teachers	878,431	BG Group^d [F], Petrofac [F]
KS2 STEM resources and CPD programme	152,370	BAE Systems [A]
RAF100	98,067	See table 16.2a
Barrow Engineering Project	73,554	Garfield Weston Foundation, Sir John Fisher Foundation (also 'involving' BAE Systems [A] , see table 16.2a)
Stoke Engineering Project	13,500	Unknown

Table 16.2d – External funding for school education (STEM) programmes run by the Royal Academy of Engineering (where known), 2016-18 [8]

A significant amount of data on the level of external funding for the school education programmes was provided in the academy's annual reports – and we commend the organisation for this – but the relationship to the projects and programmes listed in tables 16.2a-c was sometimes not clear. Table 16.2d lists the available data for the two financial years, 2016-17 and 2017-18. [8] Again, the high involvement of the arms industry and the fossil fuel industry is striking. Of the £1.2m of funding listed, at least 72% was provided by

^c Tomorrow's Engineers is a programme run by EngineeringUK. For more information, see appendix 7.

^d BG Group were taken over by Shell in 2016 – see appendix 21.

the fossil fuel industry, at least 13% by the arms industry, and 8% provided by the UK government for education specifically on military technologies.

In summary, of the academy's 13 main programmes aimed at school children and teachers over more than a decade, nine (70%) had some involvement of corporations that were part of the arms or fossil fuel industries or the UK armed forces. Of the funders of these programmes, we estimated that about a quarter were fossil fuel corporations and further quarter were from the arms/ military sectors.^e In terms of external funding over the past two years for school education programmes, figures from the academy's annual reports indicated that over 70% was provided by fossil fuel corporations and a further 20% was provided either by arms corporations or for resources which promoted military technologies. Even allowing for a lack of clarity on the financial data in some areas, these are staggeringly high proportions.

16.4 Events and sponsorship

The Royal Academy of Engineering organises dozens of events each year, and most of them appear to be funded by the academy itself. However, the most prestigious ones are generally sponsored by external organisations and we summarise these in this section, with a list of sponsors, supporters and partners being given in table 16.3.

The annual Awards Dinner "is the most prestigious event in the Academy's calendar" and takes place at the Pavilion in the grounds of the Tower of London, one of the city's "most iconic landmarks". [28] It attracts sponsorship from large industrial corporations.

The Global Grand Challenges Summit is a joint event between US National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering. The summit "aims to inspire the next generation of engineers, policymakers, and the public to address critically important engineering challenges and opportunities facing humanity." [29] It has a range of sponsorship levels.

The Forum for Engineering [30] is an events programme hosted by the academy in its London head office. The Forum "aims to change out-of-date perceptions of engineering and help attract people to the profession." The events programme is sponsored by several 'Forum Partners' which "contribute to the Academy's goal of positioning engineering at the heart of society." [30]

No details about the cost for different levels of sponsorship of any of these events were provided on the academy's website.

^e Several organisations were involved in multiple programmes/ projects. Each instance has been counted separately. For example, BAE Systems appear to have funded five of the 13 programmes, and as such they are counted five times. The different terms used for the involvement of different organisations – funder/ supporter/ partner – meant that the relationship was not always clear. The Big Bang Fair is not counted among these programmes, as it is considered within appendix 7.

<i>Event</i>	<i>Sponsorship category</i>	<i>Sponsors</i>
Awards Dinner 2019 [31]	Headline Sponsor	Rolls-Royce [A]
	Silver Sponsors	BP [F], Lockheed Martin [A]
Awards Dinner 2018 [28]	Supported by	BAE Systems [A], BP [F], Jaguar Land Rover, Lockheed Martin [A], Rolls-Royce [A]
Awards Dinner 2017 [32]	Headline Sponsor	BP [F]
	Silver Sponsors	BAE Systems [A], Electric Power Research Institute, GKN [A], Jaguar Land Rover, Lockheed Martin [A], Rolls-Royce [A]
Global Grand Challenges Summit 2019 [33]	Principal Partner	BEIS (Global Challenges Research Fund)
	Series Founding Partner	Lockheed Martin [A]
	Partner	Accenture Strategy
	Programme Partner	EPSRC
Global Grand Challenges Summit 2017 [29]	Founding Principal Sponsor	Lockheed Martin [A]
	Principal Sponsor	The Boeing Company Charitable Trust [A], Northrop Grumman [A]
	Sponsor	Shell [F]
Forum for Engineering 2018 [30]	Partners	BAE Systems [A], QinetiQ [A], Weir Group [F] [30]

Table 16.3 – Sponsors of the Royal Academy of Engineering’s high prestige events

In summary, the proportion of sponsorship from both arms and fossil fuel industries for the academy’s high prestige events was found to be very high. Nearly 60% of the sponsoring organisations were part of, or had close financial links with, the arms industry and nearly 20% were part of the fossil fuel industry.^f

16.5 Corporate membership

The Royal Academy of Engineering does not run a corporate partnership scheme like other professional institutions, in the sense that it does not offer particular benefits for a defined fee. Instead, it encourages large donations from corporations and applies for grants from charities in order to support its activities, including those discussed in the sections above. In mid-2019, it listed 41 organisations as ‘current partners’. [34] Among these were leading fossil fuel corporations, including **BP [F], Shell [F], Anglo American [F], Petrofac [F]** and **Centrica [F]**, as well as leading arms corporations, including **BAE Systems [A], Boeing [A], MBDA [A], Rolls-Royce [A],** and **QinetiQ [A]**. We calculated that 20% of the partners were part of the fossil fuel sector (including charities with close links to fossil fuel companies) and 15% were arms corporations.

^f Note that when sponsoring organisations sponsored more than one event, they were counted according to the number of events they sponsored.

16.6 Other corporate links

The Royal Academy of Engineering has also received other significant income of relevance to this report. For example, it runs the Engineering Teaching Fellowships, funded by **ExxonMobil [F]**, which supports young university lecturers in engineering. In 2017-18, the academy spent over £75,000 on this programme. [8] Also, the academy runs the UK Intelligence Community Postdoctoral Research Fellowships, which “support outstanding early-career science or engineering researchers to promote unclassified basic research in areas of interest to the intelligence, security and defence community”. This scheme received a grant of £557,000 in 2017-18 from the Government Office of Science. [8]

16.7 Overall assessment

Reviewing the information in this case study, we have given The Royal Academy of Engineering the assessment as shown in tables 16.4a and b.

	<i>Investments</i>	<i>School education programmes</i>	<i>Events</i>	<i>Other</i>
Involvement with arms corporations	Medium	Very high	Very high	High
Involvement with fossil fuel corporations	Medium	Very high	Very high	Very high

Table 16.4a – Corporate involvement ratings for The Royal Academy of Engineering

	<i>Ethical issues covered in this study</i>
Positives	<ul style="list-style-type: none"> • Extensive policy-relevant research on environmental issues • Arms industry investments excluded by one of its investment fund managers
Negatives	<ul style="list-style-type: none"> • Major financial links with fossil fuel industry in most areas studied • Major financial links with arms industry in most areas studied • Limited ethical investment policy and practices • No specific environmental policy

Table 16.4b – Positives and negatives for The Royal Academy of Engineering

We found that the academy varied in the transparency of reporting of its financial links. It published very little detailed information about its investments. While it was open about the sponsors of its events and its corporate partners, we could find no publicly available information on the level of sponsorship funding that it received from individual organisations. However, it did publish significant information about the external funders of its school education programmes and their level of funding.

The academy demonstrated its concern about environmental issues through the publication of numerous reports on the role of engineering in this area. However, we found only very limited mention of environmental responsibilities within its strategy documents, and no

specific environmental policy. Regarding an ethical investment policy, the academy told us that it considered ethical issues when selecting investment fund managers, and one of the managers it chose explicitly excluded investments in arms corporations. However, the academy lacked a specific ethical investment policy statement, there appeared to be no restrictions on its investments in the fossil fuel sector, and it was unclear to what extent restrictions on arms industry investments applied across its portfolio.

We found evidence of financial links between the academy and the arms industry in all areas of the organisation's work that we examined in this study – many of the links being substantial. About a quarter of the funders of its school education programmes and nearly 60% of the sponsors of its high prestige events were part of the arms industry. Many of its corporate partners were also part of the sector. While one of its investment fund managers excluded arms corporations from its portfolio, there was a lack of information about the extent to which this affected the academy's overall holdings.

We found evidence of financial links between the academy and the fossil fuel industry in all areas of the organisation's work that we examined in this study – again, with many of the links being large-scale. Data indicated that over 70% of recent external funding for its school education programmes was from the fossil fuel industry, and nearly a fifth of the sponsors of its high prestige events were from the sector. In addition, a fifth of its corporate partners were from the sector. The lack of a clear ethical investment policy, coupled with a marked lack of public data on its investment funds, meant that significant links to fossil fuels were likely to be present in this area as well.

References

- [1] Royal Academy of Engineering, "List of Fellows," 2018. [Online]. Available: <https://www.raeng.org.uk/about-us/the-fellowship/list-of-fellows>. [Accessed 18 01 2019].
- [2] Royal Academy of Engineering, "Annual Review 2015/2016," 2016. [Online]. Available: <http://www.raeng.org.uk/publications/strategy-and-finance/annual-review-2015-16>. [Accessed 17 07 2017].
- [3] Royal Academy of Engineering, "What we do," 2017. [Online]. Available: <http://www.raeng.org.uk/about-us/what-we-do>. [Accessed 17 07 2017].
- [4] Engineering Council and Royal Academy of Engineering, "Statement of Ethical Principles for the Engineering Profession," 2017. [Online]. Available: <https://www.raeng.org.uk/publications/reports/statement-of-ethical-principles>. [Accessed 18 01 2019].
- [5] Royal Academy of Engineering, "Current issues," 2017. [Online]. Available: <http://www.raeng.org.uk/policy/engineering-policy/current-issues#energy>. [Accessed 17 07 2017].
- [6] Royal Academy of Engineering, "Sustainability," 2018. [Online]. Available: <https://www.raeng.org.uk/policy/engineering-policy-areas/sustainability>. [Accessed 18 01 2019].

- [7] Royal Academy of Engineering, "Financial Report and Accounts," 2016. [Online]. Available: <http://www.raeng.org.uk/publications/strategy-and-finance/financial-report-and-accounts-2015-16>. [Accessed 17 07 2017].
- [8] Royal Academy of Engineering, "Financial Report and Accounts, for the year ended 31 March 2018," 2018. [Online]. Available: <https://www.raeng.org.uk/publications/strategy-and-finance/financial-report-and-accounts-2017-18>. [Accessed 21 01 2019].
- [9] Royal Academy of Engineering, "Letter to Scientists for Global Responsibility," 08 05 2017.
- [10] OLIM Investment Managers, "Statement of Ethical Policy," 2016. [Online]. Available: <http://olim.co.uk/wp-content/uploads/2017/04/statement-of-ethical-policy-2016.pdf>. [Accessed 11 07 2017].
- [11] OLIM Investment Managers, "Investment Products," 2017. [Online]. Available: <http://olim.co.uk/investment-products/>. [Accessed 17 07 2017].
- [12] Royal Academy of Engineering, "London Engineering Project," 2017. [Online]. Available: <http://www.raeng.org.uk/education/schools/education-programmes-list/london-engineering-project>. [Accessed 18 01 2019].
- [13] Royal Academy of Engineering, "Barrow Engineering Project," 2017. [Online]. Available: <http://www.raeng.org.uk/education/schools/education-programmes-list/barrow-engineering-project>. [Accessed 18 01 2019].
- [14] Royal Academy of Engineering, "Stoke Engineering Project," 2014. [Online]. Available: <https://www.raeng.org.uk/education/schools/education-programmes/stoke-engineering-project>. [Accessed 12 11 2018].
- [15] Royal Academy of Engineering, "Welsh Valleys Engineering Project," 2018. [Online]. Available: <https://www.raeng.org.uk/education/schools/education-programmes/welsh-valleys-engineering-project>. [Accessed 18 01 2019].
- [16] Royal Academy of Engineering, "Connecting STEM Teachers," 2018. [Online]. Available: <https://www.raeng.org.uk/education/schools/education-programmes/connecting-stem-teachers>. [Accessed 18 01 2019].
- [17] Royal Academy of Engineering, "This is Engineering," 2018. [Online]. Available: <https://www.raeng.org.uk/education/this-is-engineering>. [Accessed 29 11 2018].
- [18] Royal Academy of Engineering, "Engineering in high-performing schools," 2014. [Online]. Available: <https://www.raeng.org.uk/education/schools/education-programmes/engineering-in-high-performing-schools>. [Accessed 18 01 2019].
- [19] Royal Academy of Engineering, "Engineering Engagement Programme," 2017. [Online]. Available: <http://www.raeng.org.uk/education/schools/education-programmes-list/engineering-engagement-programme>. [Accessed 18 01 2019].
- [20] Royal Academy of Engineering, "Spring Newsletter 2012," 2012. [Online]. Available: <http://www.raeng.org.uk/publications/newsletters/spring-newsletter-2012>. [Accessed 14 07 2017].
- [21] Royal Academy of Engineering, "Engineering in a Box (Wales)," Undated. [Online]. Available: <https://www.raeng.org.uk/education/schools/education-programmes/engineering-in-a-box-wales>. [Accessed 18 01 2019].

- [22] Royal Academy of Engineering, "Resources to Enrich the STEM Curriculum," 2018. [Online]. Available: <https://www.raeng.org.uk/education/schools/teaching-and-learning-resources/curriculum-resources>. [Accessed 07 12 2018].
- [23] Royal Academy of Engineering, "RAF100: Aiming for Awesome," 2018. [Online]. Available: <https://www.raeng.org.uk/education/schools/teaching-and-learning-resources/raf100>. [Accessed 07 12 2018].
- [24] Royal Academy of Engineering, "Support Resources," 2018. [Online]. Available: <https://www.raeng.org.uk/education/schools/teaching-and-learning-resources/support-resources>. [Accessed 19 09 2018].
- [25] Royal Academy of Engineering, "After School Club," 2017. [Online]. Available: <http://www.raeng.org.uk/education/schools/teaching-and-learning-resources/activity-resources>. [Accessed 18 01 2019].
- [26] Royal Academy of Engineering, "Drones: friend or foe?," Undated. [Online]. Available: <https://www.raeng.org.uk/RAE/media/Publications/Curriculum%20resources/Drones%20Friend%20or%20Foe/teachers-guide.pdf>. [Accessed 18 01 2019].
- [27] The Big Bang Fair, "Sponsors," 2019. [Online]. Available: <https://www.thebigbangfair.co.uk/sponsors-2019/>. [Accessed 18 01 2019].
- [28] Royal Academy of Engineering, "Awards Dinner 2018," 2018. [Online]. Available: <https://www.raeng.org.uk/events/events-programme/2018/june/awards-dinner-2018>. [Accessed 18 01 2019].
- [29] National Academy of Engineering, "The 3rd Global Grand Challenges Summit," 2017. [Online]. Available: <http://engineeringchallenges.org/14500/23671.aspx>. [Accessed 29 11 2018].
- [30] Royal Academy of Engineering, "Forum Partners," 2018. [Online]. Available: <http://www.raeng.org.uk/events/forum-partners-3>. [Accessed 19 09 2018].
- [31] Royal Academy of Engineering, "Awards Dinner 2019," 2019. [Online]. Available: <https://www.raeng.org.uk/events/events-programme/2019/july/awards-dinner-2019>. [Accessed 29 08 2019].
- [32] Royal Academy of Engineering, "Awards Dinner 2017," 2017. [Online]. Available: <http://www.raeng.org.uk/events/list-of-events/2017/june/awards-dinner-2017>. [Accessed 14 07 2017].
- [33] Royal Academy of Engineering, "Global Grand Challenges Summit 2019: Funders," 2019. [Online]. Available: <https://www.raeng.org.uk/policy/partnerships/international-policy-and-development/ggcs/2019/welcome/funders>. [Accessed 29 08 2019].
- [34] Royal Academy of Engineering, "Current partners," 2019. [Online]. Available: <https://www.raeng.org.uk/support-us/current-partners>. [Accessed 30 08 2019].