

# From corporate science to responsible science: what's the role of R&D in tackling the polycrisis?

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(All references listed in final slides)

## Science, technology and the polycrisis

- Science & technology have huge potential to help tackle major problems including poverty, war, climate change, inequality, ill-health, pollution, loss of wildlife etc
- But powerful political & economic interests encourage narrow focus on:
  - Technofixes
  - Economic (GDP) growth
- Rather than broader focus on:
  - Research & development driven by peace/ justice/ sustainability
  - Social and economic reforms
- Could structure of science & technology sector be part of the problem?



*Image credit: Gerd Altmann via Pixabay*

## Corporate science v responsible science (1)

	Corporate science	Responsible science
<b>Funding sources for R&amp;D</b>	Business/ private sector dominant	Mixed sources – including equal roles for public sector, civil society and business
<b>Priorities for innovation</b>	Narrow focus on new technologies – especially using patents	Broad focus on technological, social, economic innovations
<b>Role of universities</b>	Narrow ‘third mission’ – to contribute to GDP growth; ‘universities as corporations’	Broad ‘third mission’ – wider public benefit, including tackling societal problems
<b>Role of social/ health/ environmental concerns</b>	Low priority	High priority – especially Sustainable Development Goals, Planetary Boundaries

- Tables in this and the following slide inspired by many sources, including: Krinsky (2003); Washburn (2006); Langley and Parkinson (2009); Oreskes and Conway (2011); Huesemann and Huesemann (2011)
- Concept of ‘responsible science’ similar to ‘science for the public good’
- Historically, universities have had two ‘missions’ – education and research. Since late 1980s, there have been moves to explicitly incorporate a ‘third mission’, a ‘contribution to society’. This has increasingly been defined in economic terms, in particular, GDP growth. For more detail of this debate, see e.g.: Compagnucci & Spigarelli (2020).

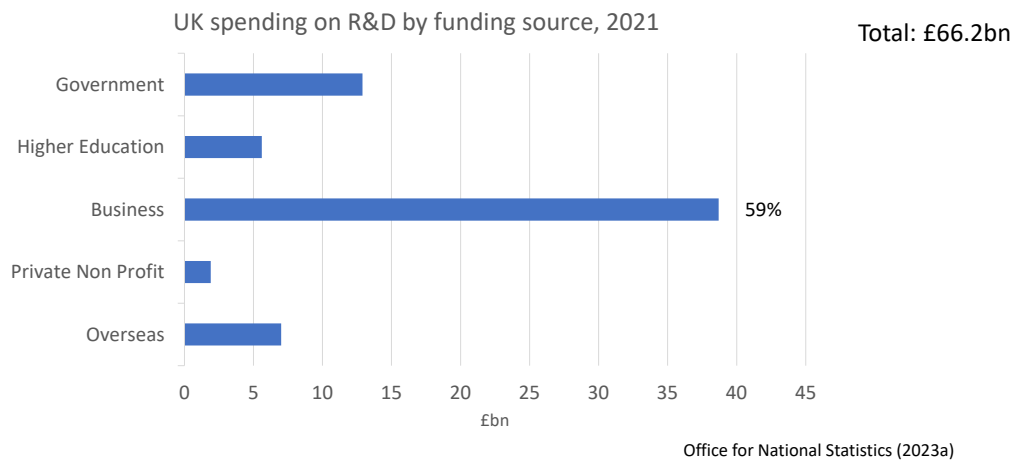
## Corporate science v responsible science (2)

	Corporate science	Responsible science
<b>Openness and transparency</b>	Low priority – widespread use of commercial confidentiality and national security restrictions, publication via commercial journals	High priority – e.g. declarations of interest, open access publishing
<b>Role of scientific scepticism</b>	Used by industry to challenge evidence of social, health, & environmental harm of technology	Used by public sector/ civil society to support precautionary principle, polluter pays principle etc
<b>Role of academic disciplines</b>	Priority for those valuable for developing and commercialising new technologies – especially in physics, chemistry, biology, engineering, economics	All academic disciplines treated as equally valuable – including social sciences, environmental sciences, philosophy etc – and interdisciplinary research

Openness and transparency – further concern: access to raw data restricted

How far is the UK down the path to  
corporate science?

## Who funds UK research & development?



- Figures are for 2021; published in 2023
- In terms of who *performs* UK R&D, business is responsible for an even higher proportion: 71%

## Disturbing trends in UK science & technology

- UK universities increasingly pushed to prioritise GDP growth
  - 2013 Witty Review influential in defining 'Third Mission'
  - 2017 Higher Education and Research Act introduced greater 'marketisation'
- Post-Brexit deregulation
  - Science & technology deregulation was key motivation for some Brexiteers
  - Advanced Research & Invention Agency (ARIA) formally set up (Jan 23)
  - Precautionary Principle/ Polluters Pays Principle downgraded in UK law (Dec 23)
- Major rise in military R&D spending funded by cuts to foreign aid R&D and basic research budget
- Links continue between fossil fuel industry & universities/ prof bodies
- Govt ministers using misleading info, promoting conspiracy theories

- Universities and economic growth, see: Witty (2013); Holmwood (2016); Wikipedia (2023)
- Brexiteer Dominic Cummings – chief of staff to PM Boris Johnson, and leading campaigner for Leave campaign – especially motivated by technology deregulation, and made creation of ARIA a condition of taking govt post (Kernohan, 2021)
- For more on ARIA, see: HM Government (2023) – summary on next slide
- Information on changes to PP & PPP from: Tattersdill (2023)
- In 2021, UK military R&D spending rose to £1.8bn, a rise of nearly £800m in real terms, while R&D spending by the Foreign, Commonwealth and Development Office was cut by £300m and basic research budget (UK Research & Innovation) was cut by £600m (Office for National Statistics, 2023b; Table 2).
- For more info on financial links between fossil fuel industry and universities, see Fossil Free Research (2023), and with professional bodies, see SGR research (Parkinson and Wood, 2019)
- At Conservative Party Conference 2023:
  - Science Minister, Michelle Donelan, claimed she was “depoliticising science” by kicking out “woke ideology” (Ball, 2023)
  - Transport Minister, Stephen Harper, said he would clamp down on ‘15-

minute city' plans (BBC, 2023)

- Both have been heavily criticised for making misleading claims.



## Advanced Research & Invention Agency (ARIA)

- New public research agency – aims include:
  - “transformative technological change”
  - “paradigm-shift in science”
  - “economic growth for generations to come”
- Operates independent of other govt depts (incl. science), research councils etc
- Initial budget of £800 million
- Exempt from Freedom of Information Act
- Based on US Defense Advanced Research Projects Agency (DARPA)

 ARIA

Empowering scientists to  
reach for the edge of the  
possible

- Policy documents emphasise focus on technological change, even though broad public benefit is included
- Sources: HM Government (2021; 2023)
- *Image: ARIA website*

## UK Science & Technology Framework 2023

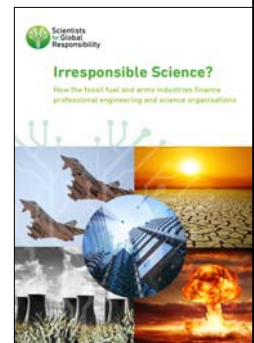
- 5 'critical technologies' for 'strategic advantage'
  - AI; engineering biology; telecommunications; semiconductors; quantum tech
- Emphasis on economic growth
- 'Pro-innovation' regulatory system
- Brief mentions of health, sustainable environment, levelling up
- No mention of Sustainable Development Goals, climate change etc
- International Technology Strategy
  - Some more acknowledgement of global social/ env issues



- DSIT (2023); DSIT & FCDO (2023)
- *Image: DSIT (2023)*

## Challenging negative trends

- Corporate science proposals have been blunted by campaigns
  - e.g. Science is Vital/ Campaign for the Public University in mid-2010s
- Some science bodies have reduced fossil fuels links due to campaigns
  - Universities: e.g. People and Planet/ Fossil Free Research
  - Professional bodies/ academic publishers: e.g. SGR
- Academic publications
  - Stricter on conflicts of interest; more open source publishing
- National science strategy documents acknowledge importance of health, social inclusion, env protection etc
  - Can be exploited by influential scientists, campaigners
- Do we need an Office for Scientific Responsibility?



- For more discussion on an Office of Scientific Responsibility, see: Simms and Webber (2020)
- *Image: Parkinson and Wood (2019)*

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