The UK Business Case for Action
UK Industrial Strategy: Scaling and Commercializing UK Science and Technology
July 2023
Introduction

The UK has a rich heritage in scientific discovery and innovation, and can rightly continue to claim to be a global leader in science-based industry:

- the UK punches above its weight in terms of scientific achievements; the UK is <1% of the global population, and yet accounts for 4% of scientific researchers, 7% of academic publications – and 14% of the most highly-cited publications – and claims 4 of the top 10 universities when ranked globally.
- the UK has maintained a reputation for being an incubator for leading technology, currently ranking 4th on the Global Innovation Index.
- the UK is the European leader in venture capital funding; in 2022, the UK represented c.35% of VC investment in Europe, followed by France and Germany.

However – despite these strengths – the UK falls short of its potential. We lack scale at critical junctures in the commercialisation journey, and fail to foster an attractive environment in which to effectively and efficiently scale manufacturing, resulting in the leakage of economic value:

- to date the UK Government has not succeeded in delivering an enduring, long-term vision for UK Science and Innovation, that would provide industry with the necessary certainty to act and to invest in the UK with confidence
- UK R&D expenditure significantly lags our peers in the OECD community; the UK invests 1.7% of GDP in R&D, compared to an average of 2.7% across the OECD; this is challenging to square with government’s aspirations of becoming a Science and Technology Superpower
- whilst the UK has achieved success in creating fertile ground for start-ups, it does not provide the necessary enablers for many of these start-ups to grow and scale to manufacture in the UK

The risks of not acting may be significant, and are amplified by competing transformative policies introduced in both the US and EU.

Without developing and delivering on a focused industrial strategy, the UK risks falling behind, with the likely result being an increase in companies investing in scaling their technologies overseas, and start-ups seeking to scale elsewhere.

This report – authored by L.E.K., in collaboration with the Society of Chemical Industry (SCI) and their Industry Partners – consolidates the views of senior leaders within the UK’s Science and Technology Industries, and makes the case that a focused, ambitious, and practical UK Industrial Strategy could deliver on untapped potential, and realise significant economic value to the United Kingdom, estimated to be in the region of c.£230bn GVA across the Life Sciences and Clean Tech sectors to 2030.
Foreword

Sharon Todd
Chief Executive Officer
SCI

For too long, ‘industrial strategy’ has been used as a catchphrase in the UK rather than a tangible and actionable plan to drive economic growth. The UK has a world-leading science base, and it needs to maximise this commercial potential.

An ambitious and practical industrial strategy focused on the world class science base would enable the UK to attract investment from global scientific companies, rather than lose out to other countries.

More focus needs to be given to creating value from science, supporting start-ups to scale, and creating an environment that attracts valuable scale-up capital.

This business case from L.E.K. consulting captures the size and scale of the opportunity. The size of the prize is clearly laid out with additional GVA to 2030 of £230bn identified with an associated 240,000 new jobs that would be precipitated by new investment in the Clean Tech and Life Science Sectors.

These would be higher than average paid roles in a range of different locations across the UK.

No one doubts the strength of the world-class universities and scientists, but the UK needs to turn that investment in research into commercial reality. What is clear is that a series of staged interventions is needed to meet a growing science-based company’s needs throughout its scale-up and commercialisation cycle, helping it through often significant periods of negative cashflow that could otherwise threaten its survival.

A series of policy interventions, if deployed together and over a consistent period of time, would bolster the UK’s position as a centre of not only science, but also of industrial research and development and the scale up to full scale manufacture of new technologies at the forefront of the 4th industrial revolution.

By committing to an ambitious science fuelled industrial strategy the UK could share in the success of homegrown innovation, instead of the positive financial and social impacts of UK ingenuity being offshored to International competitors.

The last Industrial Revolution began in the UK – however, without a clear government strategy it will be sitting on the side-lines of the next one.
About the authors

John Goddard
Senior Partner & Vice Chair, Sustainability
L.E.K. Consulting
j.goddard@lek.com

John Goddard is a Senior Partner in L.E.K.’s Global Industrials Practice. He has more than 20 years advising at Board level across Europe and North America. He spearheads L.E.K.’s work on advising clients on the energy transition on projects including devising a Net Zero strategies, evaluating new and emerging generation technologies. John co-founded L.E.K.’s Global Sustainability Centre of Excellence and co-ordinates the firm’s sustainability activities globally in his Vice Chair role.

Jack Duckworth
Partner
L.E.K. Consulting
j.duckworth@lek.com

Jack Duckworth is a Partner in L.E.K.’s Global Industrials Practice in London, with particular expertise in the chemicals sectors, and supporting clients advising on the energy transition. Jack advises clients on a broad range of commercial issues including growth strategy, performance, technology commercialisation, economic impact analysis and transaction support.
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The UK Business Case for Action

Innovation in Science and Technology
Whilst the UK has significant strength in the early stages of the innovation lifecycle, the UK’s Science-based industries face greater challenges through scale-up and commercialisation.

Summary of perspectives shared in engagement with some Industry Partners …

### Research (TRL 1-4)

#### Basic Research
- The UK has a world-leading academy, with 4 of the top-10 universities

#### Applied Research
- The UK has an extensive innovation ecosystem with strong funding for UKRI
- UK Government-financed domestic R&D represents 0.46% of GDP compared to the OECD average of 0.6%
- Equity taken by universities exceeds international comparators

### Create (TRL 5-8)

#### Industrial Development
- Whilst R&D expenditure is broadly in line with the OECD average, at c.2.6% of GDP, the UK lags global leaders, such as the USA, Germany, Japan, and Israel

#### Process Development
- Whilst the UK has a competitive R&D tax credits system; however, these incentives are at risk
- The UK is the European leader for venture capital, with more deals completed in recent history than France and Germany combined

#### Pilot Plant Scale
- However, The UK has lower availability of growth and patient capital when compared against peer nations, leading to leakage of economic value overseas

### Industry

#### Full Scale Manufacture
- Limited incentives are provided for UK Industry to scale manufacturing of disruptive new technologies from UK Science and IP
- The UK faces challenges in the long-term stability and outlook of its energy markets
- The UK does support investment zones and clusters providing facilities and infrastructure to support manufacture for both domestic and export markets

### Make (TRL 9)

#### Global Market Development
- Government and Institutions

- Lack of long-term, cross-party consensus on industrial strategy
- Cumbersome bureaucracy, causing potential perception of UK as being business unfriendly

- Pension funds – an area of UK strength – are largely prohibited from investing in early- and growth-stage companies

- The UK has a high number of STEM graduates, which on a per population basis is in line with contemporaries
- Challenges to access, attract and retain a pool of international talent, in particular for scientists and engineers

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7 | Innovation in Science and Technology
UK Innovation strategy has seen frequent change, causing a lack of consistent long-term vision; strategies have been criticised for remaining high level, and for lacking tangible plans for delivery.

The UK is perceived as lacking a lasting, stable industrial strategy

- The UK lacks a focused, ambitious, and practical UK Industrial Strategy, upon which industry can make long-term investment decisions
  “… We need an industrial strategy over a 15-year timeframe, renewing periodically – maybe every 3.5 years […] everything is too short-sighted …”
  - Industry Partner 4, March 2023

- There is a clear role for Government to develop investable business models and to de-risk emerging sectors such as hydrogen and greenhouse gas removals, particularly in commercially maturing sectors …”
  - The Resolution Foundation, May 2022

- The UK strategies have come under criticism for lacking tangible plans to deliver
  “… We lack a clear and credible plan […] the UK needs to bridge gaps between visions and ambitions, and down to earth projects and interventions needed by government …”
  - Industry Partner 6, March 2023

There has been significant turnover in leadership, coupled with a perception of bureaucracy

- Over the past five years, there have been seven ministers responsible for Government Science and Innovation Strategy
  “… The message you hear from industry is ‘we want continuity and long-term collaboration’, but the Government doesn’t offer sticking power …”
  - Industry Partner 3, March 2023

- The UK has seen a proliferation of Science and Technology-related departments and institutions, which is regarded by industry as adding bureaucracy due to overlaps in roles and remit, and inefficient interfaces
  “… There is “salami slicing” of accountability across departments, divisions and lines of Government. This means you get massively overlapping agendas and duplication of work …”
  - Industry Partner 3, March 2023

- Combined with a perceived lack of industry expertise to inform government policy decisions
  - Business leaders are seen as under-represented as advisors to the UK Government across the innovation landscape
    “… Government lacks knowledge […] Compare the UK to the Singapore model; the Singapore development board; they are full of business people they know the issue before the company knows and they know the responses…”
    - Industry Partner 11, March 2023

- Government committees and public bodies would benefit from greater expertise from those with entrepreneurial or business backgrounds, who have demonstrable commercial acumen and credentials in commercialising and scaling innovation in the UK
  “… We need people with industrial experience from ranging sectors helping Government to make informed decisions … at the moment, I don’t see anyone taking it seriously …”
  - Industry Partner 4, March 2023

Source: Resolution Foundation; UK Government; L.E.K Interviews
Whilst the UK is home to world-leading universities, it underperforms in the delivery of spin-out and the commercial opportunity derived from research; reform of support for R&D may also represent a challenge.

The UK is world renowned for its academia, housing 4 of the top 10 universities...

### QS World Top 10 Universities (2023 rankings)

<table>
<thead>
<tr>
<th>University</th>
<th>Metric Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>MIT*</td>
<td>100.0</td>
</tr>
<tr>
<td>University of Cambridge</td>
<td>98.8</td>
</tr>
<tr>
<td>Stanford University</td>
<td>98.5</td>
</tr>
<tr>
<td>University of Oxford</td>
<td>98.4</td>
</tr>
<tr>
<td>Harvard University</td>
<td>97.6</td>
</tr>
<tr>
<td>Caltech**</td>
<td>97.0</td>
</tr>
<tr>
<td>Imperial College London</td>
<td>97.0</td>
</tr>
<tr>
<td>UCL</td>
<td>95.0</td>
</tr>
<tr>
<td>ETH Zurich</td>
<td>93.6</td>
</tr>
<tr>
<td>University of Chicago</td>
<td>93.2</td>
</tr>
</tbody>
</table>

...but the UK lags international comparators in supporting and catalysing spin-outs from universities...

- Spin-outs from UK universities are perceived to be "academic driven", rather than "commercially driven"
  
  “… If we look at scale-up […] it tends to be “academic plus” rather than “business minus” “…”
  - Industry Partner 12, February 2023

- UK Universities generate fewer spin-outs than their American counterparts; University of Stanford has historically generated 1.7 times the number of spin-outs at Oxford University

- The UK university spin-out dynamic is in part affected by the commercial terms that UK universities typically impose:
  - in the UK, the average equity stake required for the university is c.20%
  - in the EU, the average equity stake is c.7%, and it is c.6% in the US

...and government support for R&D is at risk

- The UK Government spends c.0.46% of GDP on R&D, compared to an OECD average of 0.6%
  - this places the UK in 27th place in the 36 OECD nations
  - South Korea, Germany and the USA spend between 0.66-0.96% of GDP on R&D

- As UK Government investment in R&D is a stimulus for further and deeper industry investment in R&D, this underperformance has a material impact on aggregate R&D spend in the UK:
  - every £1 in public R&D funding can bring £2.50 from private funding

Source: QS World University Rankings; Stanford University Office of Technology Licensing; University of Oxford – OUI (Oxford University Innovation); L.E.K. analysis of Spinout.fyi database; OECD Government-financed R&D as proportion of GDP; Tony Blair Institute for Global Change; L.E.K. Interviews
Although the UK has a leading venture capital position in Europe, UK venture capital invests less in R&D-intensive industries than comparator countries, and increasingly focuses on early stage funding.

**The UK is the third-largest market for venture capital globally, and is the European Leader…**

Venture capital investment by country (2017-22)

<table>
<thead>
<tr>
<th>Country</th>
<th>Investment (Billions of USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.A.</td>
<td>1,187</td>
</tr>
<tr>
<td>China</td>
<td>438</td>
</tr>
<tr>
<td>UK</td>
<td>129</td>
</tr>
<tr>
<td>India</td>
<td>128</td>
</tr>
<tr>
<td>France</td>
<td>50</td>
</tr>
<tr>
<td>Germany</td>
<td>58</td>
</tr>
<tr>
<td>Canada</td>
<td>48</td>
</tr>
<tr>
<td>Israel</td>
<td>36</td>
</tr>
<tr>
<td>Singapore</td>
<td>37</td>
</tr>
<tr>
<td>South Korea</td>
<td>28</td>
</tr>
</tbody>
</table>

From 2017-22, UK venture capital has invested more than France and Germany combined.

**… UK venture capital under-indexes on investment in R&D-intensive industries…**

Venture capital investment as a proportion of GDP, by selected sectors* (2019-21)

- **Total VC investment in selected sectors as proportion of GDP**: 0.76
- **Total VC investment in R&D-intensive industry**: 0.44% GDP
- **Other R&D intensive sectors**: Climate tech, Clean tech, Life Sciences
- **Other sectors**: 0.04%

**… and funding is focused on early stage, with lower access to growth / scale-up capital**

Number of UK spin-outs and scale-up deals (2012-21)

- **Spin-out deals**
  - 2012: 309
  - 2021: 389
  - % CAGR: 1.1

- **Scale-up deals**
  - 2012: 209
  - 2021: 382
  - % CAGR: (10.1)

Source: DealRoom Global Venture Capital Monitor; British Business Bank: Small Business Equity Tracker 2022; ScaleUp Institute: Annual Report 2022
The UK has invested less in R&D over the past 20 years than the leaders amongst its OECD peers; currently proposed R&D tax credit reforms are believed may present a challenge in the future.

The UK falls short of the performance of global leaders within the OECD in terms of overall R&D funding.

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP as a percentage of GDP (2000-19)</th>
<th>R&amp;D as a percentage of GDP (2000-19)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UK **</td>
<td>1.6%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Japan</td>
<td>3.8%</td>
<td>4.7%</td>
</tr>
<tr>
<td>USA</td>
<td>3.8%</td>
<td>4.7%</td>
</tr>
<tr>
<td>Germany</td>
<td>5.8%</td>
<td>4.6%</td>
</tr>
<tr>
<td>Switzerland</td>
<td>4.6%</td>
<td>6.9%</td>
</tr>
<tr>
<td>France</td>
<td>5.8%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Israel</td>
<td>3.0%</td>
<td>4.9%</td>
</tr>
<tr>
<td>OECD Average</td>
<td>0.6%</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

In November 2022, the UK Government announced reductions in R&D tax credits.

- SME additional deduction decrease from 130% to 86%
- SME company credit rate decrease from 14.5% to 10%

From April 2023, new changes enacted by the Government include:

- SME additional deduction decrease from 130% to 86%
- SME company credit rate decrease from 14.5% to 10%

In a start-up founder survey conducted by Coadec, 97% agreed or strongly agreed that:

- the reductions would severely impact their business
- the reductions would make the UK significantly less attractive to start-ups and investors

Note:
* Converted from USD:GBP; ** figure reflects ‘Government-Financed GERD’; ***Except for SMEs classed as R&D intensive (qualifying expenditure accounting for >40% of total expenditure)

Source: OECD GDP spend on R&D by country; OECD Government-financed R&D as proportion of GDP; Coadec R&D survey: January 2023
Market participants highlight that the UK’s changing policy environment has hindered certain opportunities for long-term investment in the UK, affecting scale-up and development of the manufacturing base.

**A lack of stable UK policy is perceived as a risk for industry investment**

“… In the face of the firepower that the US and EU are bringing to bear with their huge incentive programmes to bolster onshore manufacturing, the **UK needs transformational reforms** that look to the **long term**, with the aim of equipping businesses and individuals for the scale and pace of the challenge we are facing…”

- Stephen Phipson, Chief Executive - Make UK, March 2023

“… Government should establish a **research vision and strategy** including long-term programmatic, **infrastructure and technological initiatives** … this will give RPOs, investors and global companies the confidence to invest, operate and interact with the UK R&I landscape …”

- Nurse Review, March 2023

“… If you look at the last ten years, the chopping and changing, **why would you come and make long-term investment decisions** – which are inherently risk – in an environment which is also risky? …”

- Industry Partner 8, March 2023

**The UK has the opportunity to drive significant value from incentives and infrastructure commitments**

- Businesses lack incentives to locate manufacturing in the UK, with planned cuts to incentives potentially further hindering industry willingness to operate in the UK market:
  - Planned cuts to SME tax-relief credits decrease this value by c.50%
  - In April 2023, the UK ends its super-deduction framework; which allowed companies to reduce their tax burden by up to 25p for every £1 they invested in qualifying new plant and machinery assets

- In February 2021, a poll run by BDO found 65% of 200 UK manufacturers would commit to greater investment in the UK if incentives for capital expenditure were increased

“… Look in and around the long-term commercial environment – corporate tax rates and incentives …”

- Industry Partner 2, March 2023

**Some view that the UK risks becoming progressively less attractive in key growth sectors of the future economy**

“… While we’ve got great strengths and enormous potential to grow Life Sciences in this country, we are falling behind our global competitors …”

- Richard Torbett – CEO ABPI, March 2023

“… Without bold and consistent action, one of the UK’s major success stories faces the prospect of a slow and lingering death…”

- Tony Blair Institute for Global Change, November 2022

“… Despite welcome steps and laudable rhetoric, we are concerned that the Government is not on course to meet its ambitions. Evidence of sustained focus, implementation and delivery is lacking …”

- House of Lords Science and Technology Committee, August 2022

“… The investment climate for U.K. low-carbon generation has worsened over recent months […] Increased costs and renewed international competition risk squandering the U.K.’s lead as a clean technology pioneer…”

- Emma Pinchbeck, CEO - Energy UK, February 2023

Source: Make UK; Nurse Review of R&D; UK Government, BDO; ABPI; Tony Blair Institute for Global Change; House of Lords Science and Technology Committee; Energy UK; L.E.K. Interviews
Despite the UK’s high number of STEM graduates, market participants report challenge in accessing, attracting, and retaining key science and technology talent - both from domestic and international pools.

### Whilst the UK has a high number of STEM graduates…

Top 10 OECD nations for tertiary education graduates in STEM subjects (2020)

<table>
<thead>
<tr>
<th>Country</th>
<th>Doctoral</th>
<th>Masters</th>
<th>Bachelors</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>671</td>
<td>242</td>
<td>215</td>
</tr>
<tr>
<td>Brazil</td>
<td>195</td>
<td>154</td>
<td>135</td>
</tr>
<tr>
<td>Germany</td>
<td>172</td>
<td>154</td>
<td>135</td>
</tr>
<tr>
<td>Mexico</td>
<td>113</td>
<td>100</td>
<td>82</td>
</tr>
<tr>
<td>UK</td>
<td>100</td>
<td>82</td>
<td>671</td>
</tr>
<tr>
<td>France</td>
<td>82</td>
<td>671</td>
<td>242</td>
</tr>
<tr>
<td>South Korea</td>
<td>135</td>
<td>113</td>
<td>100</td>
</tr>
<tr>
<td>Turkey</td>
<td>100</td>
<td>82</td>
<td>671</td>
</tr>
<tr>
<td>Italy</td>
<td>113</td>
<td>100</td>
<td>82</td>
</tr>
<tr>
<td>Australia</td>
<td>82</td>
<td>671</td>
<td>242</td>
</tr>
</tbody>
</table>

The UK has c.2.5 STEM graduates per 1,000 population, in line with that of Germany and leading the US.

### … attracting and retaining talent remains an issue for Science and Technology sectors…

- **Competition for graduates** is visible from well-paid sectors such as banking, with lower understanding of successful career pathways in UK research and innovation.
  - “Business, HR & Finance” attracts over 15% of Chemistry and Physics students.
  - only 8% of physics students work as science professionals 15 months after qualifying, rising slightly to c.30% for biology and chemistry graduates.

  “…I know young engineers to have not gone into the chemical industry because there is no graduate scheme and other industries have higher salaries…”
  - Industry Partner 11, February 2023

- Introducing a passport scheme to encourage younger scientists to make their home here [...] but also the same in reverse: making it easier for British scientists to access other ecosystems, fostering global science …”
  - Industry Partner 11, February 2023

### … with the loss of international students after graduation exacerbating the skills shortage

- While a revised UK “Graduate route” visa was introduced in 2021 for all non-EU citizens, remaining challenges include:
  - **lack of employer awareness** of this programme.
  - **limited timescale** of the Graduate route (2 years, extending to 3 for those with PhD / doctoral qualifications).
  - time, finance and understanding required for employees to transition from a Graduate route visa into a skilled worker visa.

  “…I’d like to see a more flexible visa system to ensure longer-term skills […] there will be a scramble for skills and not all the brightest people are going to be from the UK – we need to be open to this…”
  - Industry Partner 10, March 2023

Source: Forbes; OECD; Universities UK: International Facts and Figures 2022; Oxford Migration Observatory: Student Migration to the UK; L.E.K. Interviews
The development of a holistic UK science and innovation strategy – with the involvement and collaboration of Industry and the Academy – may serve as a means to address many of these challenges. 

**Potential Over-arching Solutions:**

- Encourage development of a **cross-party consensus** on a **long-term** Industrial Strategy, that can span beyond parliamentary cycles.
- Create mechanisms to directly involve **business expertise** to inform public bodies and **policy at the highest level**.
- **Reform and deconflict** the various **public bodies** involved in UK science and technology.
- **Deepen investment** in **Research and Development**, to catalyse industry research, and deliver on our objective of reaching OECD average.
- Develop explicit **incentives for manufacturing arising from UK R&D investment**.
- Encourage greater degrees of **scale-up and growth capital**, potentially via consolidating pension funds and liberalising investment criteria.
- Encourage the formation of **hubs and clusters** for existing scale industry in the UK, to foster innovation.
- Improve the process to **access, attract and retain international scientific talent** through targeted visa programmes.
- **Encourage VC** to increase their levels of investment in R&D intensive sectors of the UK economy.
- Improve the **efficiency of university spin-out**, potentially through reform of Technology Transfer Offices.

Source: L.E.K. Interviews, Research and Analysis
The UK’s Clean Tech and Life Sciences sectors represent potential significant areas of opportunity for a revised industrial strategy

**Life Sciences**

- The UK’s Life Sciences sector was **£65bn in 2021**, representing a 2-3% share of the £2tn global market; it is home to two of the top 10 pharmaceuticals companies (AstraZeneca & GSK) and supports 175,000 UK jobs
- The UK has significant strengths in its Life Sciences sector, drawing from a heritage in biopharmaceuticals
- However, despite these strengths, the UK Life Sciences has faced challenges in recent years
  - The UK’s share of pharmaceutical exports has declined from 11% in 2000 to 3% in 2021
  - UK-based clinical trials have declined by 41% between 2017-21
  - the SME R&D tax credit is being cut from 130% to 86%*
  - the voluntary scheme for branded medicines pricing and access (VPAS) has increased from 9.6% in 2019 to 26.5% in 2023

**Clean Tech**

- The UK Clean Tech market saw turnover of **£55bn** in the 2021 UK low carbon and renewable energy economy (LCREE), with 90k businesses and 250,000 UK jobs
- Clean Tech is a significant, global growth opportunity, with a current market of £1.2tn forecast to grow at 12% p.a. to 2030
- However, there is significant international competition for share in this growing market, underpinned by national programmes of mandates and incentives:
  - US Inflation Reduction Act of 2022 providing a $370bn support package for clean technology and infrastructure over a 10 year period
  - EU Green Deal Industrial Plan of 2023, is valued at $270bn, the equivalent of 1.6% of 2021 EU GDP
  - China’s Five Year Plan, set in 2021, includes pledges to increase renewable electricity generation by 50% by 2025; in 2022, China’s renewable power subsidy was set at $600m and its investment of $550bn in clean energy accounted for 50% of global sector spending

“…[Clean Tech] markets will not move towards a green economy at the pace required without active and ‘directional’ industrial, innovation and environmental policies […] that can set expectations and incentives…”

- The Resolution Foundation, May 2022

Note: * Enhanced R&D credit of 27% will be available for loss-making R&D intensive SMEs who spend >40% of total expenditure on qualifying R&D

Source: UK Government (Life Sciences; LCREE); Statista; MIT: The Observatory of Economic Complexity; ABPI; US Government; European Commission; Chinese Government; The Resolution Foundation
In each of the Life Sciences and Clean Tech sectors, research shows there are notable examples of market participants experiencing some challenges in the UK market.

**ILLUSTRATIVE EXAMPLES**

**Life Sciences**
- **AstraZeneca**
  - AstraZeneca changed plans for a $400m UK manufacturing facility, opting to locate in Ireland, citing a more-favourable business environment and incentives.
  
  “… You need an environment that gives you good returns and incentives to invest …[If we want a flourishing Life Sciences sector, we need more than discovery …”
  - Pascal Soriot, AstraZeneca, February 2023

- **AbbVie / Eli Lilly**
  - Two of the world’s largest pharmaceutical companies have withdrawn from VPAS, which has seen increases in rates over the past two years.

  “… Levy rates close to 27% of revenue are not seen in any comparable country and they have a demonstrable impact on our ability to operate sustainably in the UK …”
  - Todd Manning, General Manager UK AbbVie, January 2023

**Clean Tech**
- **Britishvolt**
  - The battery start-up collapsed despite the offer of a £100m grant (from the £850m Automotive Transformation Fund).

  “… British car manufacturing will migrate to where the batteries are. That is going to be in central Europe …”
  - Andy Palmer, CEO Aston Martin, January 2023

- **Arrival**
  - British EV startup reduced staff by c.50% due to financial difficulties, with a drop in enterprise value of c.90% from June 2021 to December 2022.

  “… The major factors in the Company’s decision […] included the tax credit recently announced as part of the Inflation Reduction Act – […] $7,500 to $40,000 for commercial vehicles - the large addressable market size, and substantially better margins…”
  - Arrival, October 2022

Source: Financial Times; Reuters; Marketwatch; Parkers; ABPI
Both the US and EU have recently announced and begun delivering on substantive programmes of mandates and incentives seeking to deliver growth, particularly in clean tech markets

### US: Inflation Reduction Act – 2022

- Provides a c.$370bn support package for clean technology and infrastructure over a c.10 year period
- The incentives encourage onshoring of manufacture through domestic content hurdles, leading to many businesses pivoting their operations towards the US
- This is supplemented by the pre-existing Infrastructure Investment and Jobs Act (IIJA) enacted in 2021 which provides an injection of c.$75bn into power infrastructure (including a and c.$15bn for electric vehicles)

### EU: Green Deal Industrial Plan – 2023

- The GDIP - widely seen as the EU’s response to the IRA in order to mitigate competitive threat - is valued at c.$270bn, the equivalent to c.1.6% of 2021 EU GDP, an equal proportion to that seen in the US with the IRA
- The fundamental pillars of the legislation are:
  - a predictable and simplified regulatory environment
  - faster access to funding
  - skills enhancement
  - open trade for resilient supply chains

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"... In the next few years, the economic shape of the net-zero age will be firmly set. New markets will have been created, breakthrough clean technologies will have been innovated, developed, and brought to market, and our energy systems transformed. Therefore, those who invest first and faster today will secure their place in this new economy and create jobs for a newly skilled workforce, rejuvenate industrial manufacturing bases, lower costs for people and businesses and be in a prime position to support other parts of the world to decarbonise their own economies …"

- A Green Deal Industrial Plan for the Net-Zero Age, European Commission, 2023

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Source: White House; European Commission
Were the UK to adopt policy action of similar magnitude in both the Clean Tech and Life Sciences markets, this action has the potential to deliver an incremental c.£230bn of GVA and +c.240k jobs by 2030.
Although there is a spectrum of potential solutions, there are fundamental themes which have proved critical to establishing a successful strategy elsewhere.

**Scale**
The magnitude of support / incentivisation must be sufficient to ‘move the dial’, in order to drive holistic changes within a given sector (e.g., Clean Tech) and ensure competitiveness against contemporaries.

**Duration**
Long-term incentive schemes are essential to building confidence in industry and enabling holistic strategies to be drawn-up and enacted as opposed to stepping between short-term policies and incentives.

**Targeted**
Tailoring incentives to specific sectors and providing the necessary depth of impact (e.g., cascaded support throughout the supply chain) is key to stimulating sector growth.

**Coherence**
Creating alignment between incentives and wider government strategies is vital in order to embed the sector’s development into the UK’s future economy.

**Urgency**
The timely deployment of policy is imperative to capture first-mover advantage in nascent technologies, to carve out the UK’s niche in the supply chains of the future.

Source: L.E.K. analysis
Concluding remarks

“The UK has an enviable reputation in science and technology development, yet successful scale up and commercialisation is far more elusive. Globally, there is increasing focus on national industrial strategies with significant progress being made. Now is the time for the UK to grasp this opportunity to accelerate our GDP growth”

“Without a pragmatic and holistic Industrial Strategy – one that accelerates collaboration between industry, the academy, and government – the UK risks falling behind in the global race to define its place in the supply chains and global economy of the future”
About The Society of Chemical Industry and L.E.K. Consulting

SCI, a charity established in 1881, is an industrial innovation hub connecting industry, academia, and government to accelerate science-based solutions to the big societal challenges.

Our community has over $500bn of sales and invests over $30bn in research and development globally every year.

SCI members are at the coalface of working on solutions to climate change, global health, and sustainability.

L.E.K. Consulting is an international global strategy consultancy, and a leading advisor to business, government, and investors.

Specialising in strategy, transaction support, and performance improvement consulting, L.E.K. has built a global reputation for helping businesses meet and resolve their most complex commercial challenges, deliver improved business performance, and enhance shareholder returns.

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