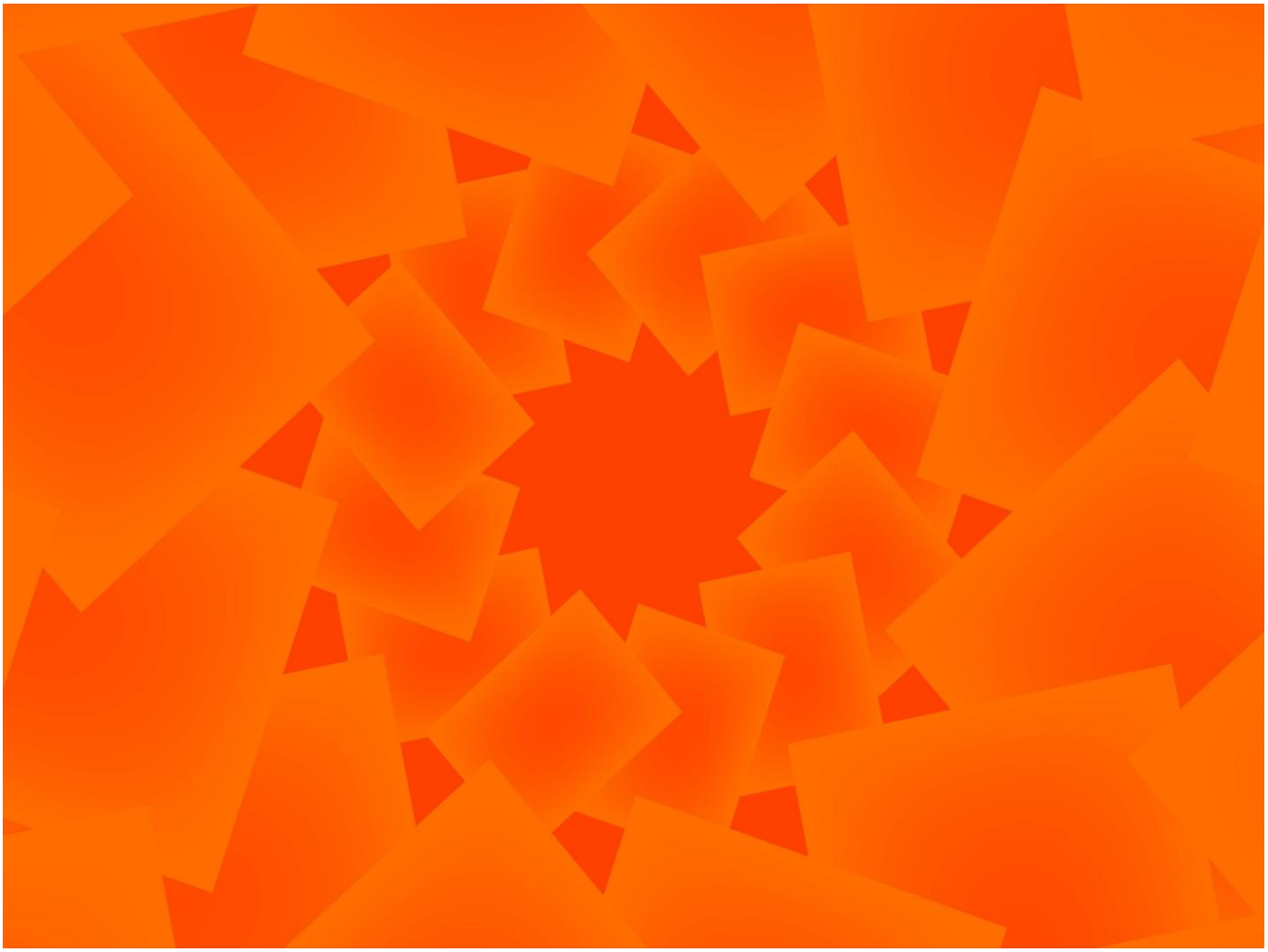
Guide to the UUK IS-8 Analytical Dashboard

Assessing UK university research contribution to the UK Industrial Strategy sectors (IS-8) in 2021-2025

September 2026



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Introduction

This guide is a companion to the UUK-IS8 dashboard

Regional dashboard: https://analytics.elsevier.com/insights/UUK-IS8

This explanatory guide accompanies the dashboard developed in June 2026 by Elsevier's Data and Analytical Services in collaboration with Universities UK. The dashboard maps UK university research outputs against seven of the eight sectors of the UK Industrial Strategy (IS-8) and provides regional evidence on the scale, growth, specialisation, collaboration patterns, and economic context of that research. The analysis covers seven of the eight sectors; Defence is excluded as a significant share of directly defence-related work is classified and does not appear in publication data, making publication-based mapping less reliable for this sector than for the others.

Navigation

Use the Overview and Sector Deep Dive tabs at the top of the dashboard to navigate between the two views. The Overview tab provides a comparative summary of UK research activity across the IS-8 sectors for any selected region. The Sector Deep Dive tab focuses on a single IS-8 sector at a time, showing its frontier-industry breakdown and key research topics. Filters at the top of each tab control geography level, the research area, and search.

Interacting with the dashboard

Every panel carries a small information icon; hover over it for definitions of the metrics and controls in that view. The geography panel has a View control that switches it between the map and a sortable table of the same regions and their metrics. Clicking a region — on the map or in the table — filters the whole tab to that entity; clicking empty space clears the selection.

Data sources

The dashboard relies on UK-affiliated publications indexed in Scopus over the period 2021-2025. Publications are classified to IS-8 sectors and frontier industries through a custom GenAI classification workflow over Scival Topics of Prominence, augmented by direct broad-sector classification. Regional economy indicators draw on ONS Business Register data and the Nomis UK Business Counts release. Geography boundaries follow the official ONS Open Geography ITL January 2025 boundaries and the May 2025 Combined Authority boundaries.

Geography coverage

Regional views cover the UK as a whole and the official ITL1 and ITL2 boundaries and a Mayoral Strategic Authority Area (MSA) layer.

Multi-campus institutions

Regional totals: where an institution's affiliations can be reliably geocoded to individual campus locations, each campus's research contributes to the region it actually sits in. A university with a main base in Yorkshire and a smaller site in London therefore contributes to both the Yorkshire and London regional totals, in proportion to where that research was produced. Only where no reliable campus-level location is available for a given publication does that research fall back to the institution's single main-location coordinate for regional purposes.

Research-area selector

The Research Area selector is the main lens of the dashboard. It controls which publications are counted and how indicators are computed. The available levels are:

All research: every UK-affiliated publication in scope, irrespective of topic. Useful as a denominator and reference baseline.

IS-8 sector: one of the broad sectors of the UK Industrial Strategy — Advanced Manufacturing, Clean Energy Industries, Creative Industries, Digital and Technologies, Financial Services, Life Sciences, and Professional and Business Services. Sector totals combine direct broad-sector classification with frontier-industry implied membership and are not a sum of frontier-industry totals.

All IS-8 sectors: a deduplicated union of IS-8 sectors. Use this as an aggregate map lens; not a sum of children.

Frontier industry: a more granular subarea inside a parent IS-8 sector (for example, Artificial intelligence inside Digital and Technologies). Frontier industries are the conceptual subarea level for IS-8 reporting.

All frontier industries: a deduplicated union of all frontier industries. As with All IS-8 sectors, this is a lens rather than a sum.

Limitations

This dashboard measures how UK university research output indexed in Scopus aligns with the IS-8 sectors and with regional economic activity. It does not provide a complete picture of UK industrial capability, and several limitations should be read alongside the results.

Scope of the evidence

Bibliometric analysis measures published, indexed research output. It does not directly measure people, funding, infrastructure, or commercial activity, and the indicators in this dashboard are proxies for those underlying phenomena rather than direct measurements of them. Some subject areas may be underreported due to differing publication norms between disciplines. Conclusions are most robust when several indicators point in the same direction, read alongside sector context, rather than any single metric taken in isolation.

Retrospective research window

The publication data covers 2021-2025, while the UK's Modern Industrial Strategy and its IS-8 sector definitions were published on 23 June 2025. Most of the period analysed therefore reflects research activity that took place before the strategy existed as a policy framework, rather than research undertaken in response to it. The dashboard should be read as a baseline of where university research already stood, not as a measure of the strategy's effect.

Industry engagement coverage

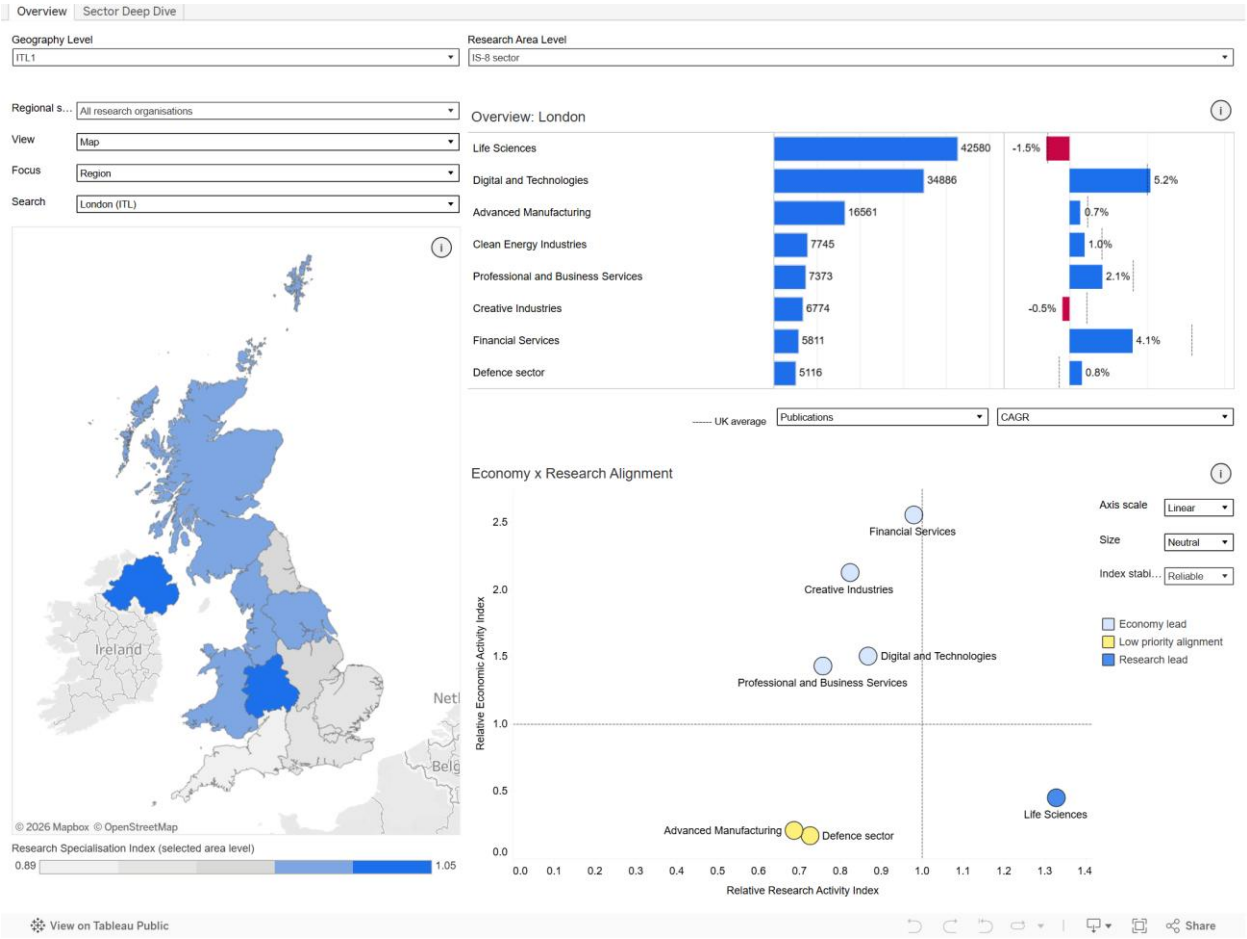
The industry-engagement indicators in this dashboard, such as academic-corporate collaboration share and patent-citation share, are partial proxies for technology transfer rather than a complete account of it. Small and medium enterprises publish substantially less than large corporations and academic institutions, and much private-sector innovation is protected as trade secret rather than disclosed through patents or co-publication. These indicators are therefore likely to understate the true extent of industry activity and academic-industry linkage, particularly in sectors where SME activity or confidential R&D is prominent.

This dashboard also sits alongside a wider body of existing IS-8 mapping work from an economic and business perspective; see “Prior and related work on IS-8 mappings” below.

1.1 Overview

The Overview tab provides a comparative summary of UK research activity across IS-8 sectors. It is designed to answer high-level questions about scale, growth, and how research strengths align with economic activity.

The left-hand map shows the selected geography level (UK, ITL1, ITL2 or MSA), coloured by the Research Activity Index for the combined IS-8 sector publication data. The Search filter narrows the map to a named region.

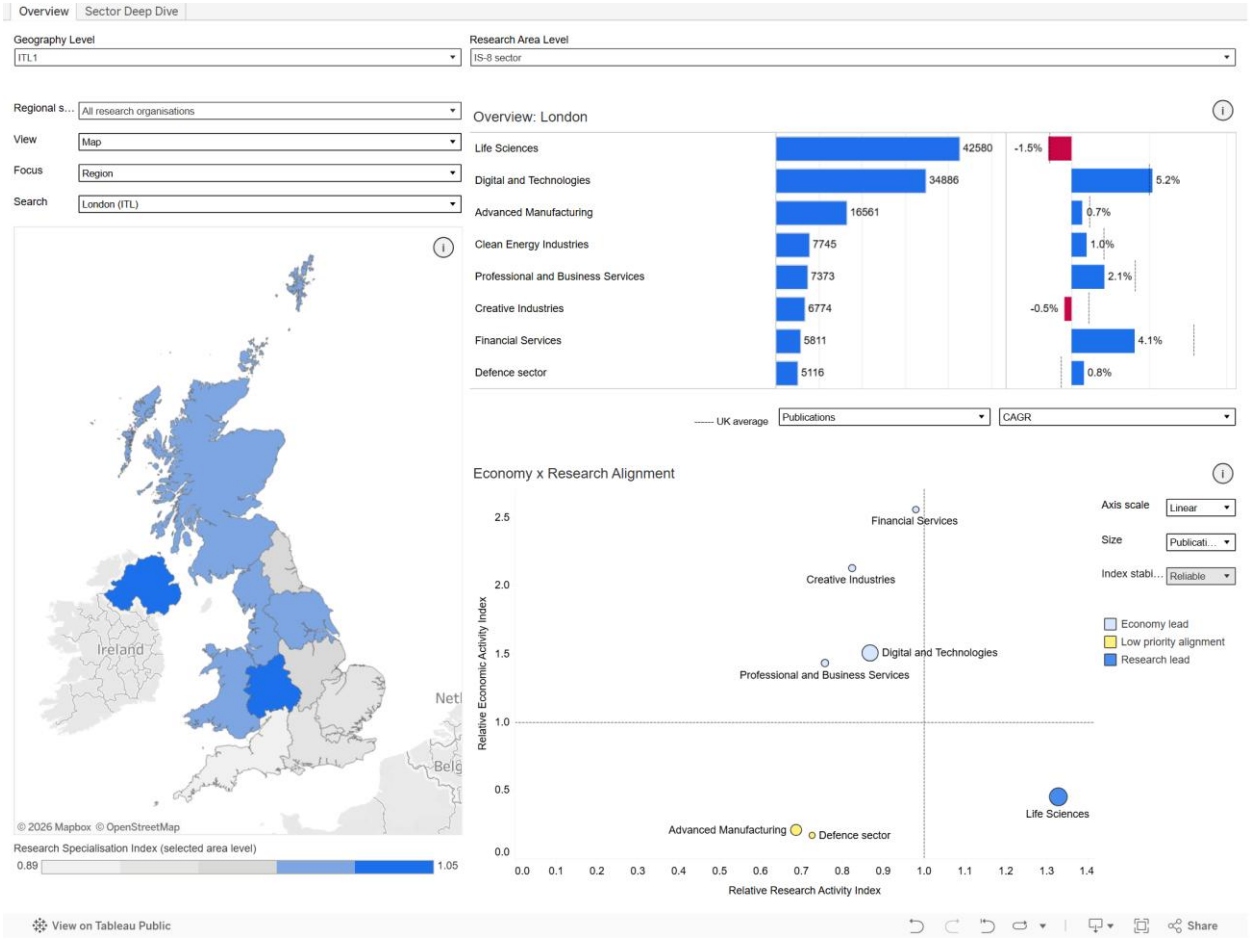


By default, the bar chart on the upper right ranks the IS-8 sectors by publication volume for the current geography selection, with the right-hand column by default showing the publication CAGR for the same selection. You can choose which indicators to show in the bar charts by choosing from the dropdown menu under the bars.

A dashed UK average reference line marks the UK figure for the selected metric, so each sector's bar can be read against the national benchmark; the line updates as you change the metric.

The lower-right Economy x Research Alignment scatter plots each sector's Research Activity Index against a relative economic activity indicator (Location Quotient). UK average reference lines split the plot into four quadrants, and a colour key highlights whether a sector leads on research, on economy, or sits below or above both UK averages.

A Size control sets what the scatter bubbles represent: Neutral (equal size), Publications (research-output scale), or turnover-weighted business count (economic scale) — so absolute scale can be read alongside relative activity. Hovering a bubble also reports that sector's economic proxy quality (see the Economic proxy quality section).



The geography panel has a View control that switches it between the map and a sortable table of the same regions and their metrics. Selecting a row in the table, or a mark on the map, filters the whole tab to that entity, exactly as a map click does.

Overview metrics

The indicators in the Overview tab were selected to capture scale, growth, and the alignment between research output and the regional economy. They are grouped into three dimensions.

Scale and Quality

- *Publications:* count of UK-affiliated publications in scope for the selected geography, research area, and period. Used as the size measure on the bar chart and as the headline output indicator.
- *Share of total research:* share of publications in any selected research area and entity relative to the selected entity's total publication count.
- *FWCI (Field weighted citation impact):* A measure of citation impact that normalises the citations received by an entity's publications against the world benchmark in the same field, publication type, and year. A FWCI of 1.0 indicates performance at the world average; above 1.0 signifies above-average impact, and below 1.0 indicates below-average impact.
- *Research Activity Index (RAI):* measures research specialisation in a given research area for a given geography. Values above 1 indicate over-representation relative to the UK average; values below 1 indicate under-representation. The map colour ramp uses the RAI for the combined IS-8 frontier industries.

Growth

- *Publication CAGR:* compound annual growth rate of publication output for the selected research area and geography across the dashboard period. Shown alongside the publication count in the IS-8 sector bar chart.

Economy alignment

- *Economic Activity Index:* a location quotient (LQ) computed from regional economic data and mapped to the IS-8 frontier-industry structure. The LQ is based on turnover-weighted business counts. The Axis Scale control allows switching between linear and logarithmic axes, which can be useful if the values appear too compressed due to outliers. The Index Stability control filters out unstable cells (where low publication or business counts may cause the indicator to become unstable).
- *Bubble size (scatter):* an optional encoding that sizes each sector's bubble by Publications (research-output scale) or turnover-weighted business count (economic scale), or keeps them equal (Neutral). Position still shows specialisation; size adds the sense of absolute scale.

Benchmarking

- *UK average line (bar chart):* a dashed reference line at the UK figure for the selected metric, so each sector's bar can be compared to the national average. It tracks the metric dropdowns and appears for the share, FWCI and growth metrics.

Collaboration

- *% Int collab. (Share of International Collaboration):* The proportion of an entity's publications co-authored with researchers from at least two different countries, indicating the level of international research collaboration.
- *% Nat. collab. (Share of National Collaboration):* The proportion of publications co-authored by researchers within the same country, reflecting domestic collaboration.
- *% Inst. collab. (Share of Institutional Collaboration):* The proportion of publications co-authored by researchers within the same institution, reflecting institution-only collaboration.

Industry Engagement

- *% Acad-Corp (Share of Academic-Corporate Collaboration):* The proportion of publications resulting from collaborations between academic institutions and industry or corporate entities.
- *% Patent cited (Share of Output with Patent Citations):* The proportion of research outputs that are cited at least once in patents, indicating engagement with or impact on technological innovation.

Policy Engagement

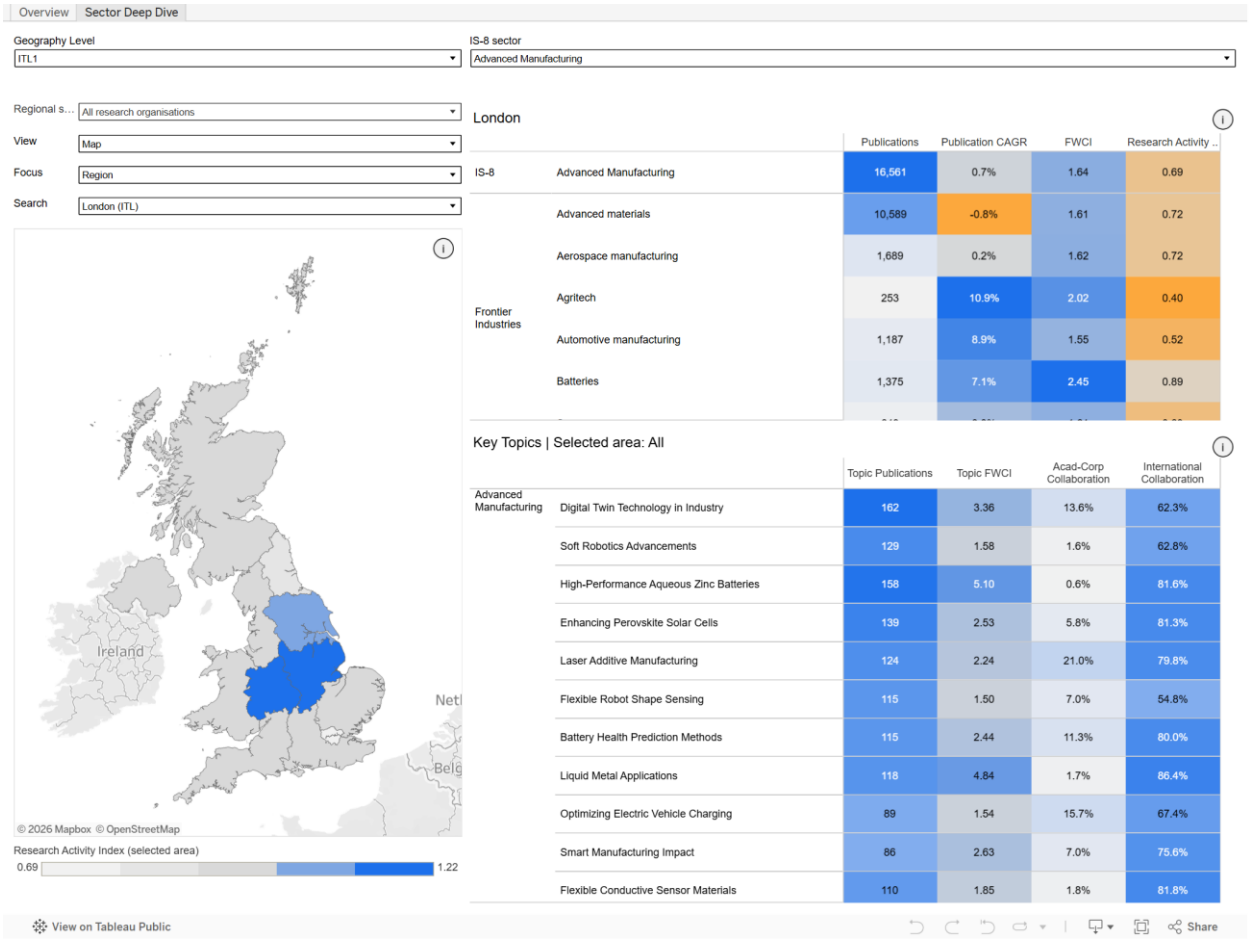
- *% Policy cited (Share of Output with Policy Citations):* The proportion of research outputs that are cited at least once in policy documents, reflecting influence on policy-making and societal impact. The Overton database of policy documents was used for this part of the analysis.

1.2 Sector Deep Dive

The Sector Deep Dive tab focuses on a single IS-8 sector at a time. It is designed to support targeted analysis of one sector's frontier-industry composition, regional concentration, and the research topics that drive its output.

Use the IS-8 sector filter at the top of the tab to pick the sector of interest. The Geography Level filter behaves the same way as on the Overview tab. The map shows a regional choropleth of the Research Specialisation Index for the selected sector.

The map recolours to the Research Activity Index of the selected sector and updates whenever you change the sector. Clicking a frontier-industry row in the Frontier Industries table drills the map down to that frontier; deselecting returns it to the sector total. As on the Overview tab, the geography panel can be switched between map and table with the View control, and selecting a region filters the rest of the tab.



The Frontier Industries table on the upper right breaks the selected IS-8 sector into its constituent frontier industries with publication count, publication CAGR, mean FWCI, and Research Activity Index for each. The Key Topics panel underneath lists the top SciVal Topics of Prominence within the selected area, alongside per-topic publication count, mean FWCI, share of academic-corporate collaboration, and share of international collaboration. Topic rows are capped at the top 50 by publication count per grain to keep the view manageable.

Sector Deep Dive metrics

Frontier-industry and topic indicators share a consistent definition with the Overview tab, computed at the corresponding finer grain.

Scale and quality

- *Publications*: count of UK-affiliated publications classified to the selected frontier industry or topic, for the current geography and period.
- *FWCI (Field weighted citation impact):* A measure of citation impact that normalises the citations received by an entity's publications against the world benchmark in the same field, publication type, and year. A FWCI of 1.0 indicates performance at the world average; above 1.0 signifies above-average impact, and below 1.0 indicates below-average impact.
- *Research Activity Index (RAI):* research specialisation for the selected frontier industry or topic, on the same definition as the Overview tab. Frontier-industry RAI is reported with a stability flag derived from a confidence-interval check; very small denominator areas may flip across 1.0 and are filtered out by default.

Growth

- *Publication CAGR*: compound annual growth rate of publication output for the frontier industry across the dashboard period.

Collaboration

- *% Int collab. (Share of International Collaboration):* The proportion of an entity's publications co-authored with researchers from at least two different countries, indicating the level of international research collaboration.

Industry Engagement

- *% Acad-Corp (Share of Academic-Corporate Collaboration):* The proportion of publications resulting from collaborations between academic institutions and industry or corporate entities.

Economic proxy quality

The economic indicators in the dashboard — the location quotients on the Economy x Research Alignment scatter and the economy-scale bubble size — are built by mapping official SIC industry codes to the IS-8 sectors and frontier industries. How well SIC represents an area varies by sector, following the GOV.UK Industrial Strategy sector definitions. Each area is graded into one of three proxy-quality tiers, and hovering a point on the scatter reports the tier for that sector or frontier industry.

Full proxy

- Professional and Business Services: the official SIC divisions give a complete, measurable definition of the sector, so the economy figures are directly comparable to the research figures.

Partial proxy

- Advanced Manufacturing, Creative Industries, Defence, Digital and Technologies, Financial Services, and Life Sciences: SIC captures part of the sector but misses important activity (for example advanced materials, creative software, most defence services, AI and quantum, fintech and sustainable finance, or the parts of Life Sciences defined through Office for Life Sciences classifications). Read the economy figures for these sectors as indicative.

No defensible proxy

- Clean Energy Industries: GOV.UK states SIC is too restrictive for this sector — its activity spans manufacturing, construction and services and cannot be represented by SIC alone. Clean Energy therefore has no economy figure, so it does not appear on the Economy x Research Alignment scatter and has no economy-scale bubble. It still appears in full on the map, bar chart and Sector Deep Dive, which are research-only.

Two points are worth keeping in mind. First, proxy quality (how well SIC represents a sector) is distinct from the Index Stability flag on the scatter, which is a statistical check on small-denominator location quotients. Second, at the finer frontier-industry level the picture is more nuanced than the sector tier: several frontier industries inside partial-proxy sectors are themselves full proxies (for example Aerospace manufacturing, Automotive manufacturing, and the Professional and Business Services frontier lines), while others have no defensible SIC basis. The per-point note on the scatter reflects the rating for the specific area in view.

Registered-office vs. workplace geography

Business-count and turnover-weighted business-count indicators are based on enterprise registered-office locations, not on where economic activity physically takes place. UK Business Counts data geolocates each enterprise to its registered/head-office address, so a company headquartered in one region but operating manufacturing, logistics, or other facilities elsewhere has its entire business count and turnover weight attributed to its registered-office region. This can overstate economic activity in regions with a high concentration of head offices, London in particular, and understate it in regions where the underlying operational activity, such as production, manufacturing, service delivery actually happens.

This dashboard does not currently include a workplace-based economic indicator, such as employment counts by place of work, as a cross-check against the registered-office-based business measures. The economy alignment figures should be read as indicative of registered business presence, not of the physical location of economic activity, with particular caution applied to regions known to have a large share of registered head offices relative to operational sites.

Data sources

Scopus is a comprehensive, source-neutral abstract and citation database that covers outputs from over 7,000 publishers globally, including peer-reviewed journals, books, and conference proceedings. Its content is curated by an independent international advisory board to ensure consistent quality, with rigorous selection criteria applied across all sources.

Scival Topics of Prominence cluster the entire Scopus corpus into thousands of research-area topics based on citation patterns. They are the basis for the GenAI classification of publications into IS-8 sectors and frontier industries.

Nomis UK Business Counts provides annual business counts by industry, geography, and turnover band. The dashboard uses turnover-weighted business-count LQ, derived by weighting each business count by the midpoint of its turnover band.

ONS Open Geography ITL January 2025 and Combined Authority May 2025 boundaries define the regional polygons.

Overton is the world's largest searchable index of policy documents, guidelines, think-tank publications, and working papers. It is the source of the policy-citation indicator.

LexisNexis IP DataDirect is the bulk delivery platform for global patent data and is the source of the patent-citation indicator. Patent citations are counted as distinct patent families.

Prior and related work on IS-8 mappings

Methodology precedent

The classification method used in this dashboard (grouping the Scopus corpus into research Topics via citation-pattern clustering, then mapping those Topics to a policy sector framework using GenAI-assisted classification) is the same general approach Elsevier's Data and Analytical Services used to map UK research output to the UK Government's Five Missions (2019-2023), and follows the staged co-creation approach used in prior sector-alignment engagements. This dashboard is a further application of that established method to the IS-8 framework. The proxy-based indicators used for industry engagement and the SIC-based economic alignment approach follow the same general principles set out in Elsevier's Academic Evaluation Framework: that every quantitative indicator is an imperfect proxy, and robust interpretation requires multiple lines of evidence read in context rather than any single number in isolation.

Existing IS-8 mapping work

Several other organisations have already published mapping and analysis of the IS-8 sectors from an economic and business perspective, and this dashboard is intended to sit alongside that body of work rather than duplicate it. The Data City has produced the most extensive body of this work, including its “Open Sourcing the Industrial Strategy” report and IS-8 Sector Mapping Guide[1], which defines each IS-8 sector using Real-Time Industrial Classifications (RTICs) as an explicit alternative to SIC codes, and a regional analysis (December 2025) using location quotients on business counts to show where IS-8 sectors cluster across UK cities and regions[2]. The Data City's classifications also underpin the Department for Science, Innovation and Technology's Innovation Clusters Map, developed with Cambridge Econometrics and the Innovation and Research Caucus and updated October 2025[3], which is cited in the Industrial Strategy's own Technical Annex, and Centre for Cities' “Eight sectors, one story” report (25 June 2025)[4], which found that IS-8 activity concentrates heavily in the Greater South East and co-locates strongly across sectors. The House of Commons Library has separately published official estimates of IS-8 economic output and employment by UK nation and region (research briefing CBP-10439)[5], noting that most IS-8 sectors do not align cleanly with standard SIC-based statistics, the same underlying limitation reflected in this dashboard's proxy-quality grading. Universities UK has also published on universities' role in the Industrial Strategy (“Why universities are critical to an industrial strategy”, September 2025)[6].

How this dashboard differs

All of this prior work addresses the IS-8 sectors from a business, firm-location, or economic-output angle. No comparable existing analysis maps UK university research output specifically, at publication level, using bibliometric classification, against the IS-8 framework. This dashboard's contribution is intended to add a research-output lens alongside the economic and business-cluster mapping already published, not to replace or duplicate the economic picture those other sources provide.

[1] The Data City, “Open Sourcing the Industrial Strategy” report and IS-8 Sector Mapping Guide, 2025. Available at: https://thedatacity.com/reports/open-sourcing-the-industrial-strategy/ and https://thedatacity.com/invest-2035-guide/.

[2] The Data City, “Where do the Government’s Industrial Strategy IS-8 sectors cluster across the country?”, 11 December 2025. Available at: https://thedatacity.com/blog/where-do-the-governments-industrial-strategy-is-8-sectors-cluster-across-the-country/.

[3] Department for Science, Innovation and Technology, “Innovation Clusters Map: summary and methods”, updated 1 October 2025. Available at: https://www.gov.uk/government/publications/innovation-clusters-map-summary-and-methods/innovation-clusters-map-summary-and-methods.

[4] Centre for Cities, “Eight sectors, one story: The geography of the Industrial Strategy”, 25 June 2025. Available at: https://www.centreforcities.org/reader/eight-sectors-one-story/.

[5] House of Commons Library, “How much do the Industrial Strategy sectors contribute to UK countries and regions?”, research briefing CBP-10439, 2025. Available at: https://commonslibrary.parliament.uk/research-briefings/cbp-10439/.

[6] Universities UK, “Why universities are critical to an industrial strategy”, 11 September 2025. Available at: https://www.universitiesuk.ac.uk/what-we-do/policy-and-research/publications/why-universities-are-critical-industrial.

About the dashboard

The dashboard was developed in June 2026 by Elsevier's Data and Analytical Services in collaboration with Universities UK, building on the IS-8 classification work that maps UK university research outputs against the sectors of the UK Industrial Strategy.