

South Yorkshire Investment Playbook

Diagnostic: Turning Production and Innovation Capabilities into Growth

A place-based diagnostic of South Yorkshire's production and innovation capabilities: where the two already meet, where research strength has yet to become local production and jobs, and where the region can plausibly diversify next. Built on a single taxonomy of nine sectors and forty-five subsectors, comparing South Yorkshire with the eleven other Mayoral Combined Authorities and Greater London.

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National Policy Continues To Move Towards What South Yorkshire Already Has

Between March and April 2026 alone, the region was awarded a £50 million Defence Growth Deal and named as one of the North's two defence clusters.

1 A Shifting Economy

Re-militarisation, decarbonisation and active industrial policy have moved from rhetoric to budget lines. The Modern Industrial Strategy is a year into delivery and still in force; £298 B of defence investment is committed to 2029/30, at 2.7% of GDP; and £1.7 B of City Investment Funds went to the North, £85 M of it to South Yorkshire. National policy now points at much of what South Yorkshire does.

2 South Yorkshire's Assets Are Being Revalued

South Yorkshire is home to strategic assets that have a new place in the national strategy. The region has depth in specialist steel, industrial machinery and metals, two universities and an applied-research estate — the AMRC, Nuclear AMRC, the Energy Innovation Centre — sitting inside that industrial geography. April 2026's £50 M Defence Growth Deal named those very assets.

3 Our Contribution: Measuring Production And Innovation At Once

We built a data-driven framework that puts production and innovation on the same sector-subsector taxonomy, for South Yorkshire and every comparator MCA, and uses it to identify both regional strengths and diversification opportunities. Our aim here is to contribute a way of thinking about it, and to find the big bets for production-innovation value chains.

4 Strength Lies Where Production And Innovation Meet

South Yorkshire has both production strength and innovation strengths. Co-location turns research into local production, and local production into the reason the next research pound is spent here. The region holds co-located activity in several subsectors — from sustainable mobility to medical and pharmaceutical equipment — and openings into higher-complexity activity.

5 South Yorkshire Has Distinctive Strengths

The region is a top leader in Basic Metals and Industrial Machinery, and the North Leader in Metal & Chemical Materials, Medical Equipment Mfg. and Transportation. The University of Sheffield ranks among the top 10 UK universities for growth sector research, led by advanced mfg. and life sciences. The four Growth Areas sit directly on those assets, from the Advanced Manufacturing Park to South Yorkshire Airport City.

6 Our Findings Provide A Platform For Tailored Interventions

Every subsector lands in one of four categories, and each names a different instrument: consolidate where production and research already reinforce each other, commercialise where research runs ahead of jobs, support innovation where jobs run ahead of research, and build adjacent capabilities where complexity opens a path. Running them is a separate capability: the Industrial Strategy Advisory Council's July 2026 report finds that effective local growth policy depends on the institutional ability to coordinate planning, skills, transport and investment.

Five Sectors Where Production and Innovation Reinforce Each Other

Upstream Manufacturing and Logistics, Advanced Manufacturing, Clean Energy Industries, Life Sciences and Defence hold the region's distinctive strengths. They are one industrial base with shared capabilities underneath — materials, precision engineering, legacy manufacturing, logistics and applied research.

SECTOR	SUBSECTORS - EXAMPLE	DISTINCTIVE ASSETS TO LEVERAGE	OPPORTUNITIES TO UNLOCK	SOUTH YORKSHIRE vs THE 11 MCAs + GREATER LONDON						
				JOBS	JOBS RANK	R&I RANK	OVERALL INDEX	SY vs MCAs	RCA	DIVERSIFICATION OPPORTUNITY
UPSTREAM MANUFACTURING & LOGISTICS	Transport & Warehousing	Rich legacy of industrial excellence, rooted in its historical strengths (e.g., steel production) and industrial infrastructure—land, energy, logistics.	Supply-chain expansion; innovation; close diversification opportunities in rail freight terminals and warehousing services.	18,500	#2	#9	5	North leader	2.1	Yes
	Freight Transport by Road			9,000	#3	#4	3	Top performer	1.8	–
	Basic Metals			4,275	#1	#7	3	Top performer	7.4	–
ADVANCED MANUFACTURING	Eng. & Technical Consulting	The AMRC and Factory 2050 on the Advanced Manufacturing Park, with Boeing, Rolls-Royce, McLaren and NIKKEN. Second in the UK for the size of this innovation cluster.	Prototype to production to attract global companies; innovation; diversification opportunities (downstream); convert design into production.	10,250	#10	#2	8	Mid-table	0.7	Yes
	Metal & Chem. Materials			7,935	#2	#6	5	North leader	5.5	–
	Industrial Machinery & Tools			6,375	#1	#4	2	Top performer	2.8	Yes
	Electronic & Tech. Equip.			1,270	#7	#6	6	Mid-table	1.2	Yes
DEFENCE (OEMs)	IT & Telecom Services	MOD-owned Forgemasters, BAE's £25 M artillery factory, and £50 M through the Defence Growth Deal, April 2026.	Strategic contributor to the UK defence supply chain but lags in SME integration into defence supply chains and scale of innovations.	12,425	#11	#10	10	Lagging	0.8	Yes
	Other Defence-related Serv.			3,695	#11	#9	10	Lagging	0.9	Yes
	Air & Spacecraft Machinery			350	#7	#4	7	Mid-table	0.3	Yes
CLEAN ENERGY INDUSTRIES	Waste & Materials Recovery	ITM Power's electrolyser plant, Europe's largest; Nuclear AMRC is a world-class facility specialising in advanced nuclear technologies.	A market-led hydrogen hub around ITM Power; industrial decarbonisation for energy-intensive users (e.g., logistics, mfg. plants).	3,025	#7	#8	5	Mid-table	1.3	–
	Sustainable Mobility			1,575	#7	#3	6	Mid-table	2.2	–
	Clean Power Hydrogen			500	#2	#7	5	Mid-table	2.1	–
LIFE SCIENCES	Med. & Pharm. Mfg. Equip.	Medical device manufacture is the sharpest specialisation in life sciences: 3.1x the national share, 1st of twelve.	Leverage manufacturing expertise; connect research to commercial applications; diversification opportunities.	2,500	#1	#10	5	North leader	3.1	–
	Medical & Biotechnology R&I			840	#9	#10	8	Lagging	0.3	Yes
	Med. & Pharm. Mfg. Prod.			–	–	#9	9	Lagging	–	Yes

Specialised / top four of twelve

Moderate / fifth to eighth

Notes: Jobs are 2023 values, the latest year available in the ONS Business Register and Employment Survey. Ranks are South Yorkshire per capita among the 11 MCAs and Greater London. Overall Index is the average of South Yorkshire's per-capita rankings on jobs, R&I, firms and patents, rounded to whole numbers; seven of the subsectors shown have no patents ranking, and for those the average is taken over the three that exist. RCA: Revealed Comparative Advantage. Note that new data has been released since we developed this analytical exercise.

Source: New Localism Associates (2025).

Global and National Forces Are Reshaping the Fortune of Regions

The forces named in 2025 have continued to gain traction, and new funding streams are landing in the North.

GLOBAL CONTEXT

UK CONTEXT



Remilitarisation & Industrial Policies

Shifting geopolitics and rising regional conflicts are driving national policies aimed at strengthening domestic and regional supply chains.

The Defence Investment Plan commits £298 B over 2026/27–2029/30, taking defence spending to 2.7% of GDP by 2027/28.



Technological Acceleration

Technology adoption is accelerating, reshaping industries as countries ramp up incentives for tech development.

Record public R&D investment: £20.4 B in 2025/26, targeting AI, advanced manufacturing, quantum and aerospace.



Energy Transition

The global push for decarbonisation is accelerating, and the surge in data traffic and energy demand calls for new solutions.

More than £30 B a year will be allocated to clean energy industries by 2035, targeting low-carbon technologies.



Geography of Discontent

Regional economic disparities correlate with political responses; marginalised communities have voiced their discontent at the ballot box.

Up to £1.7 B of City Investment Funds devolved to northern mayors under the Northern Growth Strategy — £85 M of it to South Yorkshire.

The Industrial Strategy Has Moved From Sector Plans to Place-Based Delivery

Published in June 2025, the Modern Industrial Strategy named eight growth-driving sectors, and all eight sector plans are now published. We add a ninth sector for South Yorkshire, to capture defence- and manufacturing-adjacent activity and enabling capabilities.



Advanced Manufacturing

- High-value, high-wage jobs
- Supports clusters nationwide, including South Yorkshire's AMID
- Investment to rise from £21bn to £39bn by 2035



Clean Energy Industries

- Investment to rise above £30bn a year by 2035
- Energy costs cut up to 25% from April 2027 for 10,000+ electricity-intensive manufacturers
- Offshore wind, hydrogen, SMRs, green steel



Creative Industries

- Become a global creative superpower
- Investment from £17bn to £31bn by 2035
- Better access to finance for scaleups and R&D



Defence

- Spending rising to 2.7% of GDP by 2027/28 (Defence Investment Plan)
- Support localised defence ecosystems
- Global leadership in defence innovation
- **A route to market for materials, precision engineering and applied research capabilities the region already holds.**



Digital & Technologies

- Frontier tech: AI, quantum, cyber, semiconductors, eng. biology
- Upskilling the workforce in digital skills
- £1bn to expand AI compute 20-fold by 2030; £670m for quantum



Financial Services

- Pension mega-funds for higher-growth assets
- British Business Bank: £4bn Growth Capital for the eight sectors
- World's most innovative financial centre by 2035



Life Sciences

- Over £2bn of government funding, plus UKRI and NIHR
- Up to £600m, with Wellcome, for an AI-ready health data service
- Up to £520m for domestic production of treatments and devices



Professional Services

- £150m+ in AI and tech programmes to boost adoption
- Investment to rise from just under £35bn to £65bn by 2035
- Made Smarter: tech adoption for SMEs

+ Upstream Mfg. & Logistics

Our ninth sector. Added because it captures industries with a strong South Yorkshire presence and enabling capabilities; subsectors selected on median wage above the national average and tradability. Advanced Manufacturing and Upstream Manufacturing & Logistics are reliant on each other, so strength in one sustains the other.

See subsectors in Appendix A

Source: New Localism Associates (2025 — revised in August 2026); Invest 2035; the UK's Modern Industrial Strategy (June 2025); UK's Modern Industrial Strategy: year one (8 July 2026). Year-one delivery: over £380 B of private investment into the eight sectors and more than 155,000 jobs.

South Yorkshire's Growth Plan Includes Key Spatial Priorities

Four Growth Areas are directing local efforts in South Yorkshire.

Don Valley

Rotherham town centre through to Sheffield: four adjacent innovation campuses and 30 R&D facilities.

ASSETS NAMED BY SYMCA

Advanced Manufacturing Park (AMRC); Templeborough Business Zone; Sheffield Olympic Legacy Park; Forge Island and Rotherham Gateway; Waverley Rail Station; Runway Park

SECTORS

Advanced Manufacturing
Defence*
Clean Energy
Life Sciences / Preventive Health**

Sheffield City Centre and Innovation Spine

A city-centre corridor linking the two universities and Sheffield Technology Park through Station Quarter, Castlegate, West Bar and St George's.

ASSETS NAMED BY SYMCA

University of Sheffield and St George's; Sheffield Hallam University; Sheffield Technology Park; Station Quarter; Castlegate; West Bar

SECTORS

Digital and Technologies
Life Sciences
Creative Industries

South Yorkshire Airport City

Doncaster Sheffield Airport re-established as the anchor of a clean, connected aviation cluster, with a centre of excellence for maintenance, renewals and overhaul.

ASSETS NAMED BY SYMCA

Doncaster Sheffield Airport; Airside Advanced Aviation Zone (DSA04); Gateway East Innovation Quarter (EMP05)

SECTORS

Advanced Manufacturing
Clean Energy
Upstream Mfg. & Logistics
Defence

Barnsley Town Centre

The UK's first 'Tech Town', building digital infrastructure and a planned National Centre for Digital Technologies on the back of public service reform.

ASSETS NAMED BY SYMCA

The Seam Digital Campus; The Glassworks; Health on the High Street (Alhambra Centre); Eldon Street Heritage Action Zone

SECTORS

Digital and Technologies
Life Sciences / Preventive Health
Creative Industries

Note: (*) Defence in Don Valley is our attribution. We tag it from the £50 M Defence Growth Deal of 13 April 2026, which names the University of Sheffield AMRC — inside this corridor — Sheffield Forgemasters and BAE Systems' artillery factory. Source: SYMCA's Growth Plan.

Across Growth Areas, Many Production And Innovation Ingredients Recur

Manufacturing and innovation are more interconnected than ever, and in South Yorkshire the assets behind both sit together. Each Growth Area offers a unique mix of manufacturing legacy, applied research, co-location, engineering capabilities, talent, and energy and logistics.

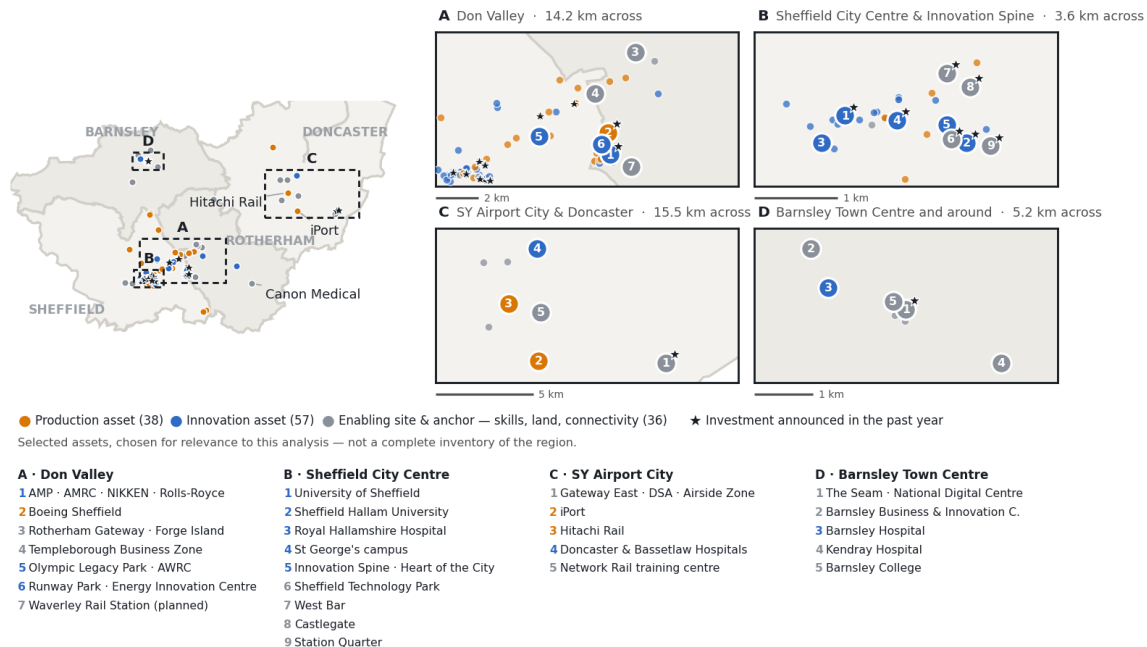
Reshoring and domestic supply chain strengthening are revaluing the local manufacturing legacy.

Local applied research capabilities are at the core of the advanced manufacturing revolution.

Co-location of production and innovation assets enables feedback loops between companies and R&D.

The region is a talent hub for engineering and digital skills.

South Yorkshire has connectivity and logistics strengths that, combined with energy strengths and upstream industries, create an enabling environment for supply chain development.



Note: the maps display selected assets, not a complete inventory. Boundaries are the four local authorities. A hospital counts as innovation where it runs its own research infrastructure; private and community hospitals are mapped as anchors. Source: New Localism Associates (2025 — revised in August 2026); SYMCA's Growth Plan.

When innovation and production capabilities are **co-located**, regions are more likely to develop **complex capabilities**, enabling them to move into higher-value industries and sustain long-term economic growth.

We built a framework to measure South Yorkshire's position in UK growth sectors, and the subsectors inside them. It reads production and innovation on the same page, so it can reveal where the two already meet, and where the region holds a niche of its own.

Our Methodology Brings Innovation and Production Into One Framework

We built a data-driven framework that puts production and innovation on the same sector–subsector taxonomy, for South Yorkshire, other MCAs and Greater London. It runs on two methodologies.

1 Innovation & Production Capabilities Assessment

Homogenises, aggregates, and analyses metrics on jobs, firms, patenting and R&I grants on one taxonomy, to find sectors and subsectors that can build on what is already there. It aims to identify opportunities from existing strengths and innovation and production co-location. Detailed below.

2 Economic Complexity (EC)

Analysis of diversification opportunities based on Hidalgo's and Hausmann's economic complexity methodology (Harvard). It aims to identify where the region can move towards more complex activities using the capabilities it already has. See Appendix C for more details.

DETAIL — INNOVATION & PRODUCTION CAPABILITIES ASSESSMENT

DIMENSION	VARIABLE	CLASSIFICATION	METRICS
Innovation	R&I Spending UKRI funding that can support innovation in each growth-driving sector and subsector.	Keyword-based algorithm	Size Absolute value, to assess the region's scale in a sector.
	Patenting Activity Patents granted to institutions and companies related to each sector and subsector.	Keyword-based algorithm	Growth Rate of change over time for each variable.
Production	Jobs Private direct and related employment in each growth sector and subsector.	SIC codes by sector and subsector	Location Quotients Regional specialisation and competitive advantage.
	Firms The number of firms in each sector and subsector, or with similar capabilities.	SIC codes by sector and subsector	Rankings Comparative positioning against the other MCAs (absolute and per capita values).

VALUE PROPOSITION

- Classification algorithms organise R&D and patenting around strategic sectors and technology domains.
- MCAs and universities mapped to sector-subsector taxonomy, to show who leads, in what, and where the strategic openings are.
- Energy subsectors, the regional defence footprint and other priority industries mapped directly.
- 30+ key players engaged during a visit to South Yorkshire to test and refine the findings.

More details on the Methodology in Appendices B and C

We Look for Distinctive Strengths in South Yorkshire

Each category says something different about what the region already holds, and therefore about which instruments the strategy should reach for.

1 Co-located Production & Innovation

A strong local industry base together with significant innovation activity. These are more mature subsectors, with real South Yorkshire leadership, where the move is to consolidate the position at home and abroad.

FURTHER ADVANCING STRONG INDUSTRIES

The opportunity is sustained productivity gains and continued expansion: a capabilities feedback loop in which research informs industry and production strengthens innovation.

2 Innovation-led Niche

Strong innovation performance with a limited job footprint. Read through R&I spending and patenting activity.

LEVERAGING INNOVATION STRENGTHS

The opportunity is to translate that innovation into jobs — commercialisation, scaling up. Research can fuel jobs through spin-offs and proximity.

3 Production-led Niche

A strong industry base with average or weaker performance elsewhere in the ecosystem. Read through employment levels and the number of operating firms.

LEVERAGING MANUFACTURING STRENGTHS

The opportunity is to grow the economic footprint. The base can be leveraged, but risks staying put while value moves upstream.

4 Diversification Opportunities

Economic complexity analysis identifies activities that need similar capabilities: higher value-added subsectors where the region already has related capabilities. Existing production strengths make the move lower-risk and higher-reward.

DIVERSIFYING INTO MORE COMPLEX INDUSTRIES

The opportunity is to move into more complex related subsectors and to develop the supply chain — the region is likelier to succeed where its existing capabilities are close.

Growth Sectors Account for 36% of Employment In South Yorkshire

Around 214,000 jobs across the nine sectors in 2023. The base is large but concentrated, and some subsectors also encompass employment not necessarily fully connected to growth sectors.

SECTOR AND SUBSECTOR	JOBS	SHARE
LIFE SCIENCES	~69,665	12%
Healthcare and Medical Activities	61,900	89%
Other Related Pharmaceutical Goods & Serv.	4,425	6%
Medical & Pharmaceutical Mfg. Equipment	2,500	4%
Other subsectors	840	1%
UPSTREAM MFG. & LOGISTICS	~36,525	6.5%
Transport, Warehousing & Related Activities	18,500	51%
Freight Transport by Road	9,000	25%
Basic Metals	4,275	12%
Other subsectors	4,750	13%
ADVANCED MANUFACTURING	~28,325	5%
Metal and Chemical Materials Manufacturing	7,935	28%
Industrial Machinery and Tools	6,375	23%
Other subsectors	14,015	49%
CLEAN ENERGY INDUSTRIES	~9,900	2%
Waste Management	3,025	31%
Sustainable Mobility	1,575	16%
Other subsectors	5,300	54%

SECTOR AND SUBSECTOR	JOBS	SHARE
PROFESSIONAL & BUSINESS SERVICES	~22,075	4%
Legal Services	6,875	31%
Other subsectors	15,200	69%
DEFENCE (OEMS)	~16,540	23%
IT and Telecommunications Services	12,425	75%
Other subsectors	4,115	25%
DIGITAL AND TECHNOLOGIES	~14,075	2.5%
Telecommunications Services	5,850	42%
Other subsectors	8,225	58%
FINANCIAL SERVICES	~12,300	2%
Financial Services and Securities	3,815	31%
Other subsectors	8,485	69%
CREATIVE INDUSTRIES	~4,375	1%
Design, Printing and Publishing Services	1,930	44%
Other subsectors	2,445	56%
ALL NINE FOCUS SECTORS	~214,000	36%

Note: jobs are 2023 values, the latest year available in the ONS Business Register and Employment Survey. On a sector row, the share represents that sector's share of total employment in South Yorkshire; on a subsector row, it represents the subsector's share of employment within the broader sector. Some SIC codes fall into more than one subsector and are therefore counted in each relevant subsector; the total, however, counts each SIC code only once. This is a SIC-based categorisation, which means that some categories may capture more employment than the employment fully connected with a growth sector (for example, the SIC Healthcare and Medical Services). Note that new data has been released since we developed this analytical exercise.

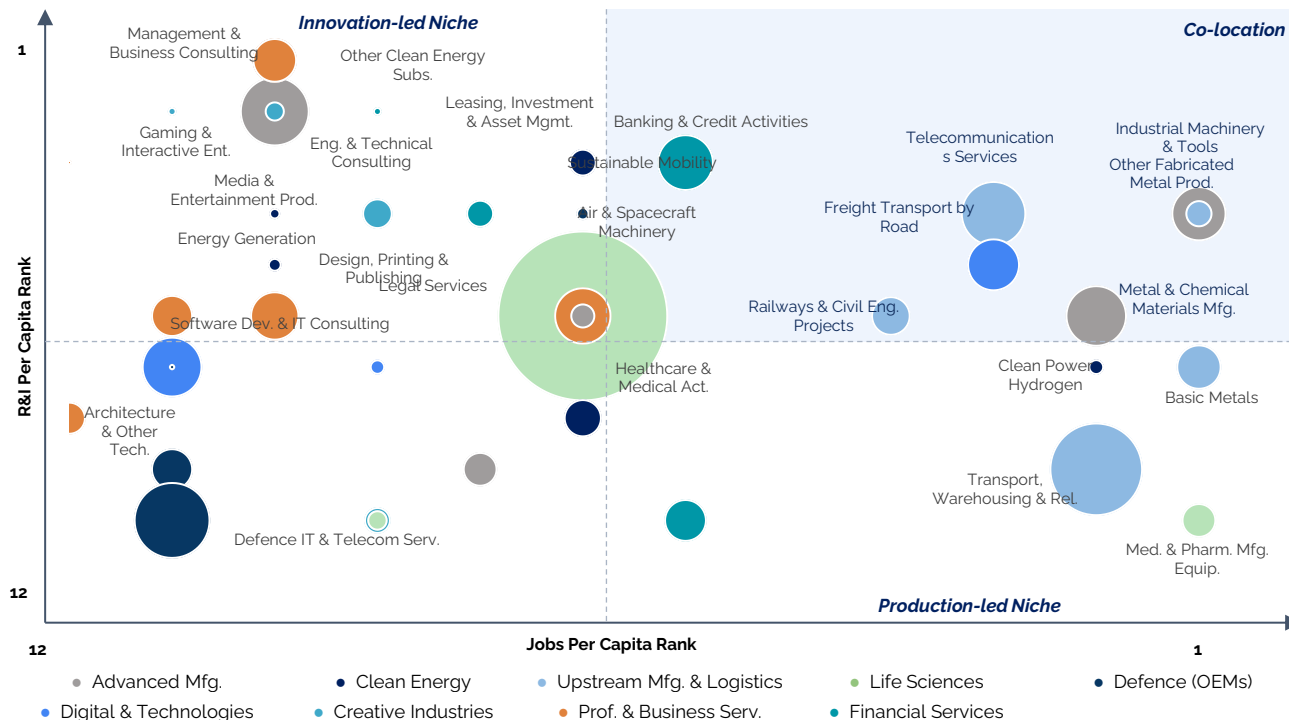
Source: New Localism Associates (2025).

In several growth subsectors, South Yorkshire has both production and innovation strengths. Co-location creates a capabilities feedback loop: invention informs local industry, and local production sharpens research.

The spatial dynamics of the next industrial economy are rewarding city-regions that can connect companies, research and talent pools that are both distributed and co-located in innovation districts and corridors and manufacturing parks.

Where Innovation Meets Production in South Yorkshire

Seven subsectors are co-located, eighteen are innovation-led and five are production-led. Different strengths require tailored strategies.



1 Co-located Production & Innovation

Strong job footprint and strong R&D in the same subsector. Seven subsectors sit there, among them industrial machinery and tools, metal and chemical materials, and freight transport by road.

2 Specialised Niches

Strong on one dimension only. The map opens this into two legs:

Innovation-led — eighteen subsectors

Engineering and technical consulting, other clean energy, healthcare and medical activities.

Production-led — five subsectors

Transport and warehousing, basic metals, medical and pharmaceutical equipment.

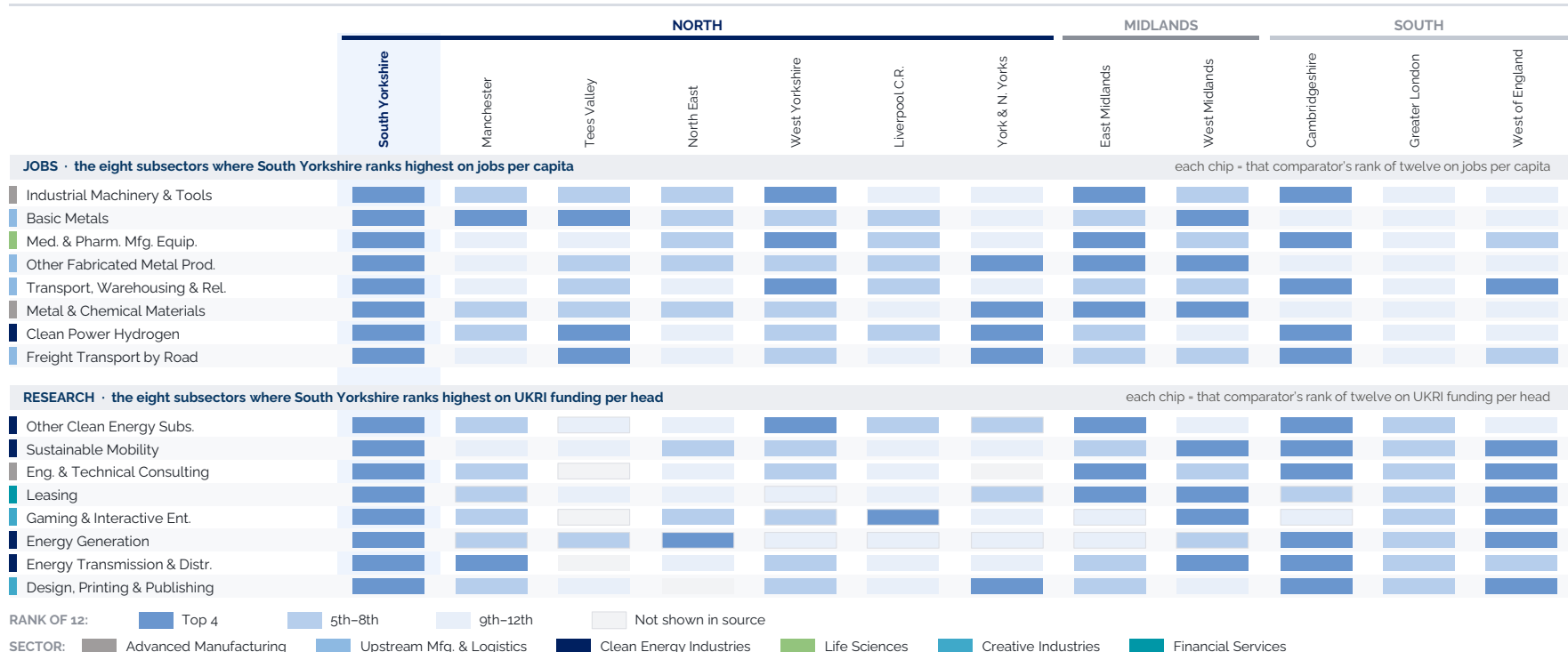
3 Diversification Opportunities

Not shown on this map: it is measured with economic complexity, not with jobs and research rankings. Air and spacecraft machinery, electronic and technology equipment and medical and biotechnology R&I are among the openings.

Note: axes are South Yorkshire's rank of twelve on jobs per capita and on UKRI R&I per capita — both per head of resident population. Bubble area is the subsector job base and colour is the sector. All forty subsectors with both rankings are plotted. Note that new data has been released since we developed this analytical exercise. Source: New Localism Associates (2025).

The Region has Niche Specialisations that Stand Out in the MCA Landscape

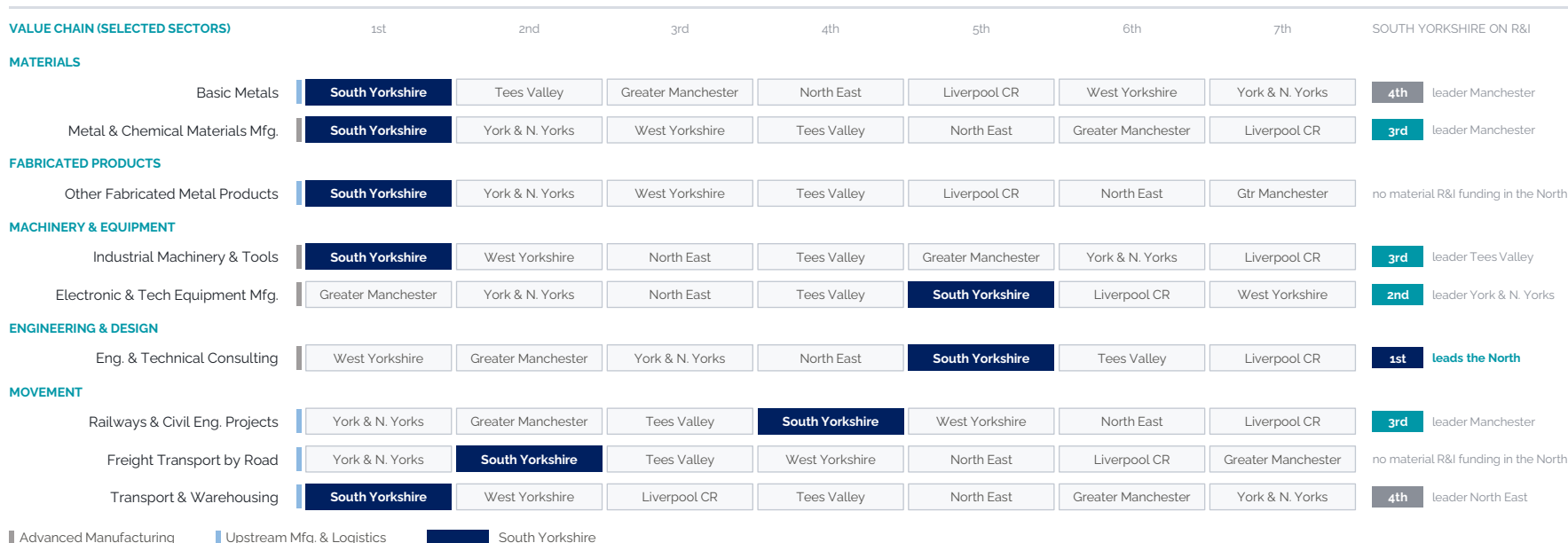
We compared the region with the broader UK landscape to identify potential allies and complementary strengths.



Note: jobs are 2023 values; R&I is accumulated for 2013–2023. For this assessment, R&I funding was split 50 % to the lead institution and 50 % proportionally among collaborators. Multi-year grants were distributed proportionally across the grant period. Note that new data has been released since we developed this analytical exercise. The R&I rankings on this page use the collaborative attribution series. Appendix F sets out the attribution series and the processing behind them. Source: New Localism Associates (2025).

SY Leads the North in Specialisation Across Much of the Industrial Cluster

Ranked among the seven northern MCAs, South Yorkshire leads on jobs per head in several subsectors — basic metals, fabricated metal products, metal and chemical materials, industrial machinery, and the transport that moves them. Research follows the chain upstream and thins out downstream, where the North as a whole receives almost none. Clusters matter because regional competitiveness is increasingly determined not by the presence of individual sectors, but by the density of connections between firms, talent, research institutions, infrastructure and markets.



Note: boxes are ordered first to seventh on jobs per capita, from the subsector job counts by comparator. The R&I badge is South Yorkshire's rank on UKRI awards accumulated 2013–2023; as elsewhere in this report, R&I funding was split 50 % to the lead institution and 50 % proportionally among collaborators, and multi-year grants were distributed proportionally across the grant period. Both measures are per resident, and ranks are within the seven northern Mayoral Combined Authorities only; where funding is below £1 per resident across the whole North, no rank is shown. Note that new data has been released since we developed this analytical exercise. Source: New Localism Associates (2025).

South Yorkshire Drives Innovation at a National Scale

The region ranks in the top five on research funding per head in seven subsectors.

SUBSECTORS WITH HIGH R&I MCA RANKING IN SOUTH YORKSHIRE.* ACCUMULATED 2013-2023.

Subsector	Total R&I	R&I MCA Ranking	R&I Growth**	Growth MCA Ranking
Other Clean Energy Subsectors	£ 17.1 M	# 1	-41%	# 11
Engineering & Technical Cons.	£ 18.6 M	# 2	408%	# 3
Gaming & Interactive Ent.	£ 0.8 M	# 2	210%	# 5
Media & Entertainment Production	£ 0.07 M	# 3	New	# 3
Energy Transmission & Distribution	£ 7.6 M	# 4	25%	# 5
Design, Printing, & Publishing Serv.	£ 2.0 M	# 4	121%	# 2
Ship Building & Related Activities	£ 0.5 M	# 5	38%	# 8
Air & Spacecraft Machinery	£ 14.5 M	# 6	33%	# 8

● Advanced Manufacturing ● Clean Energy Industries ● Digital and Technologies ● Defence (OEMs) ● Creative Industries

UKRI FUNDING TO SOUTH YORKSHIRE WITH PARTNERS FROM OUTSIDE THE REGION.* 2020-2024.

Sector	Share***	Examples of Partners from Outside the Region
Defence (OEMs)	77%	- Rolls-Royce Plc (Greater London) - CloudNC Ltd (Greater London)
Upstream Mfg. & Logistics	65%	- Toshiba Europe Limited (Cambridgeshire & Peterborough) - Octagon i/o Ltd (West Midlands)
Clean Energy Industries	37%	- Rolls-Royce Power Engineering Plc (East Midlands) - Nisland Motor Manufacturing (UK) Limited (North East)
Advanced Manufacturing	28%	- Airbus Operations Limited (West England); - GNK Aerospace Services Limited (West Midlands)
Digital and Technologies	17%	- Pragmatic Semiconductor Limited (Cambridgeshire & Peterborough) - Vamstar Limited (Greater London)
Life Sciences	3%	- Dubit Limited (West Yorkshire) - Green Rose Chemistry Ltd (York and North Yorkshire)
Creative Industries	0%	-

Notes: (*) Only selected subsectors are displayed in the table. UKRI awards accumulated 2013–2023, ranked per head of resident population against the 11 MCAs and Greater London. R&I funding was split 50 % to the lead institution and 50 % proportionally among collaborators. Multi-year grants were distributed proportionally across the grant period. Note that our R&I metric measures UKRI awards only. The Ministry of Defence funds over 80% of publicly funded defence R&D and is outside this dataset; UKRI's defence-relevant funding concentrates on dual-use and underpinning technologies. This applies equally to every region, so relative rankings hold. (**) R&I Growth is the change between the 2019–2023 average and the 2014–2018 average of UKRI funding. (***) Share of all UKRI funding to South Yorkshire's institutions where partners are from outside the South Yorkshire region. Note that new data has been released since we developed this analytical exercise. Source: New Localism Associates (2025).

The University of Sheffield Stands Out Nationally

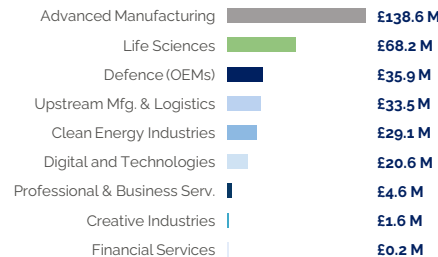
The region hosts a university in the national top ten for priority-sector research.

TOP UNIVERSITIES BY SUBSECTOR.* RANKING AND ESTIMATED UKRI FUNDING.** TOTAL 2020–2024.

Sector	Subsector	Universities Ranking				
		#1	#2	#3	#4	#5
Clean Energy	Sustainable Mobility	Nottingham (£9.4 M)	Sheffield (£8.9 M)	Birmingham (£3.5 M)	Bristol (£2.5 M)	Manchester (£2.0 M)
	Other Clean Energy Areas	Oxford (£6.3 M)	Leeds (£5.0 M)	Sheffield (£4.8 M)	Manchester (£4.7 M)	I.C. London (£3.0 M)
Advanced Mfg.	Eng.-Technical Consulting	Leeds (£14.8 M)	Sheffield (£14.2 M)	I.C. London (£10.6 M)	Nottingham (£9.6 M)	U.C. London (£7.6 M)
	Industrial Machinery & Tools	Manchester (£47.3 M)	Sheffield (£28.1 M)	Birmingham (£25.7 M)	Bristol (£18.8 M)	I.C. London (£18.5 M)
Creative Industries	Design, Printing, Publishing	Sheffield (£0.32 M)	Nottingham (£0.09 M)	Birmingham (£0.07 M)	Teesside (£0.02 M)	-
Life Sciences	Healthcare & Medical Act.	I.C. London (£9.6 M)	U.C. London (£6.7 M)	Sheffield (£3.4 M)	Nottingham (£3.3 M)	Manchester (£3.1 M)
Upstream Mfg. & Logistics	Basic Metals	Birmingham (£4.2 M)	Oxford (£3.3 M)	Sheffield (£3.2 M)	Cambridge (£2.7 M)	U.C. London (£2.1 M)
Defence (OEMs)	Air and Spacecraft Machinery	I.C. London (£4.5 M)	Sheffield (£3.8 M)	Manchester (£3.7 M)	Nottingham (£3.7 M)	Birmingham (£3.2 M)

Of the UKRI funding the University of Sheffield led between 2020 and 2024, around £240 million could be classified and connected to national priority sectors, ranking it 8th among UK universities on that basis.***

Estimated UKRI Funding Captured by UoS. 2020–2024.



Who those grants are won with — and where those partners sit — is on the next page.

Notes: (*) Subsectors were selected based on where U. Sheffield showed the strongest R&I performance. In addition to universities within MCAs, the University of Oxford was included due to its national relevance, despite not belonging to any MCA. In the panel on the right sector figures overlap and do not sum to the total. See Appendix F. (**) UKRI funding was split 50 % to the lead institution and 50 % proportionally among collaborators. Multi-year grants were distributed proportionally across the grant period. (***) £490 million in funding went to unclassified grants, including theoretical research, as well as research with a different sectoral focus. Note that new data has been released since we developed this analytical exercise. Source: New Localism Associates (2025).

Local Research Is World-Class, But The Connections Are Not Local

Four of the five largest non-academic partners sit outside South Yorkshire, and none of the five largest academic partners is in the North.

TOP NON-ACADEMIC PARTNERS IN UKRI-FUNDED PROJECTS

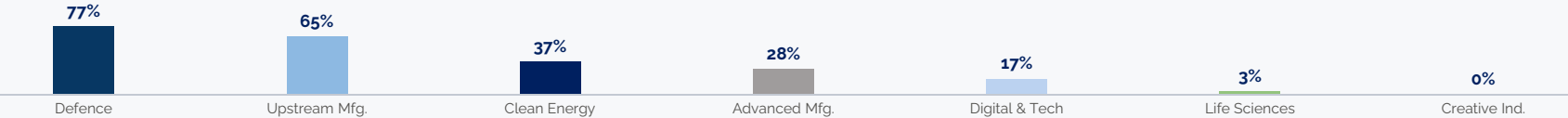
#	PARTNER	REGION	LARGEST SHARED PROJECT
#1	GKN Aerospace Services	Midlands	Digitally Enabled Competitive and Sustainable Additive Manufacturing (DECSAM) · £23 M · 2024–2028
#2	IQE PLC	Wales	UK National Foundry for Quantum Components (QFoundry) · £4 M · 2020–2024
#3	Centre for Process Innovation	North	Flue2Chem: a UK value chain converting industrial waste gases into sustainable materials · £2.7 M · 2022–2025
#4	Advanced Mfg. Research Centre	South Yorkshire	Automotive Excellence in Aerospace (AXIS) · £0.5 M · 2020–2023
#5	The Mfg. Technology Centre	Midlands	AutoRamp: automation of wing assembly for rate and ramp · £11.4 M · 2018–2024

TOP ACADEMIC PARTNERS IN UKRI-FUNDED PROJECTS

#	PARTNER	REGION	LARGEST SHARED PROJECT
#1	University of Cambridge	South	UK National Foundry for Quantum Components (QFoundry) · £4 M · 2020–2024
#2	University of Glasgow	Scotland	Agile Quantum Safe Communications (AQuaSec) · £5.8 M · 2018–2021
#3	Cardiff University	Wales	UK National Foundry for Quantum Components (QFoundry) · £4 M · 2020–2024
#4	Imperial College London	South	100% SAF, Net Zero Flight (NZF) · £0.7 M · 2023–2024
#5	Coventry University	Midlands	Advanced Fuel Cells for Aviation Decarbonisation · £11 M · 2024–2026

HOW MUCH OF UKRI FUNDING TO SOUTH YORKSHIRE INVOLVES PARTNERS FROM OUTSIDE SOUTH YORKSHIRE

The pattern is not uniform: in Defence and Upstream Manufacturing almost all of it does; in Life Sciences and Creative Industries almost none.



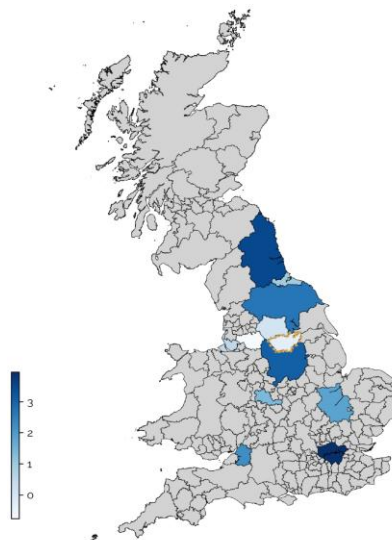
Notes: Partners are ranked by the number of joint UKRI projects with the University of Sheffield, 2020–2024; the project shown is the highest-value grant shared with that partner. Note that new data has been released since we developed this analytical exercise. Source: New Localism Associates (2025).

South Yorkshire Has Climbed Places in Economic Complexity

The region has been on a positive trajectory, increasing the complexity of its economy. However, it still lags behind the UK average.

ECONOMIC COMPLEXITY INDEX BY MAYORAL COMBINED AUTHORITY, 2009 AND 2023.

Mayoral Combined Authority	Rank 2023	ECI 2023	Rank 2009	ECI 2009	Δ rank
Greater London	#1	3.95	#1	3.74	0
West of England	#2	1.70	#2	0.93	0
Greater Manchester	#3	1.15	#6	0.03	+3
Cambridgeshire & Peterborough	#4	0.58	#4	0.56	0
West Midlands	#5	0.18	#5	0.31	0
Liverpool City Region	#6	-0.02	#7	-0.42	+1
West Yorkshire	#7	-0.09	#8	-0.56	+1
South Yorkshire	#8	-0.33	#11	-0.68	+3
York and North Yorkshire	#9	-0.59	#3	0.66	-6
North East	#10	-0.61	#10	-0.67	0
East Midlands	#11	-0.73	#12	-0.96	+1
Tees Valley	#12	-0.76	#9	-0.66	-3



ECI BY MCA AND LOCAL AUTHORITY, 2023

South Yorkshire outlined: grey areas are outside the twelve comparators.

A region's complexity score reflects how sophisticated and how diverse the goods and services it makes and does are, judged by what it can do competitively that few other places can.

More complex economies show higher wages, higher margins and lower volatility. South Yorkshire ranked 8th of twelve in 2023, at -0.33. In 2009 it ranked 11th, at -0.68.

That is a gain of three places and 0.35 points — one of the three largest improvements in the group, alongside Greater Manchester and the West of England. The region has been adding capability, not losing it.

Two cautions. First, the region is still below the UK average: the index is normalised, so zero is the national mean. Second, movement to date is no guarantee of movement ahead.

The Complexity Outlook Index — which measures how much sophisticated activity sits within reach of what a place already does — is -0.99 for South Yorkshire.

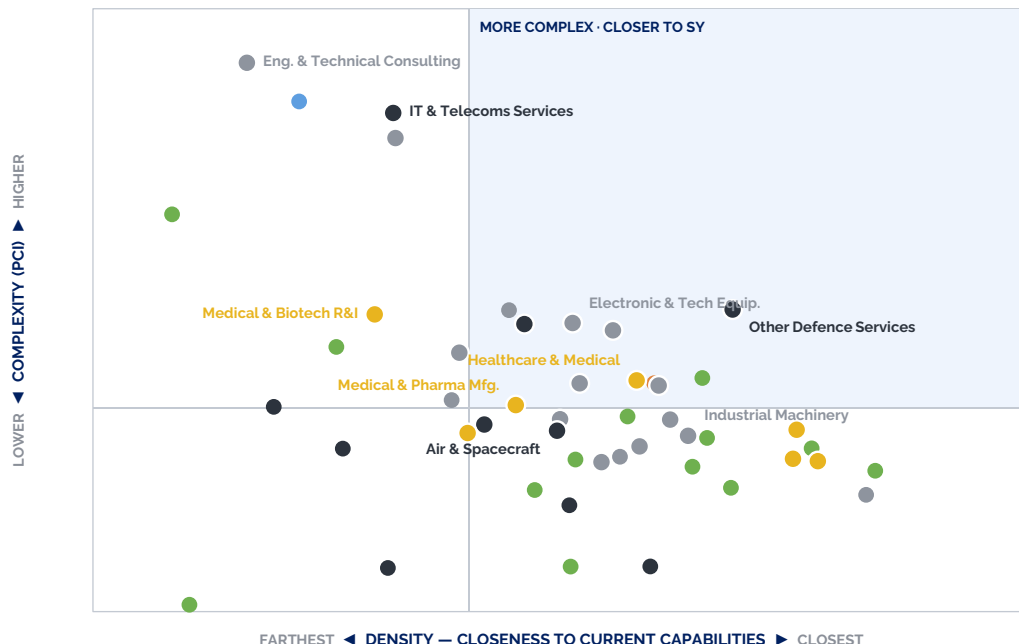
The activities nearest to its current base are themselves low-complexity. Inertia therefore points towards more of the same, which is the case for choosing deliberately rather than drifting.

Note: PCI — Product Complexity Index: how knowledge-intensive an activity is. ECI — Economic Complexity Index: how complex a place is, given what it does competitively. Density: how close a place already is to something it does not yet do. COG — Complexity Opportunity Gain: how much entering an activity would widen future options. ECI is normalised, so zero is the UK average; negative and positive values show how far below or above the national average a place sits. 2009 is the first year available in BRES. The method is established in UK regional policy — see Mealy and Coyle (2022) on economic complexity and local industrial strategy. Source: New Localism Associates (2025); method after Hidalgo and Hausmann; Mealy & Coyle, "To them that hath: economic complexity and local industrial strategy in the UK" (2022).

The Region's Diversification Opportunities Sit Close to What It Already Does

South Yorkshire can acquire new productive capacities in more sophisticated and higher-value-added goods and activities.

SOUTH YORKSHIRE DIVERSIFICATION OPPORTUNITIES. BY COMPLEXITY (PCI) AND DENSITY (CLOSENESS).



SECTOR

- Advanced Manufacturing
- Clean Energy Industries
- Life Sciences
- Defence
- Digital and Technologies
- Upstream Mfg. & Logistics

WHERE THE OPENINGS ARE

The best diversification opportunities into higher value-added activities require a balance between feasibility (density) and sophistication (complexity). In South Yorkshire, these opportunities appear in the following sectors and subsectors:

DEFENCE

- Air & Spacecraft Machinery
- IT & Telecommunications Services
- Other Defence-related Services

ADVANCED MANUFACTURING

- Electronic & Tech Equipment Mfg.
- Engineering & Technical Consulting
- Industrial Machinery & Tools

LIFE SCIENCES

- Medical & Biotechnology R&I
- Medical & Pharma Mfg. Products
- Healthcare & Medical Activities

Note: The PCI measures how knowledge-intensive an activity is. Density measures how close an activity is to what the region already does. Labels mark the nine subsectors named at right; where a subsector spans several activities the label sits on its most complex one. Source: New Localism Associates (2025).

Strategic Choices Require Balancing What's Feasible With What's Ambitious

By balancing Complexity, Complexity Outlook Gain (COG), and Density, we ranked and selected subsectors and sectors in South Yorkshire.

	SUBSECTOR	TOP SIC OPPORTUNITY	COMPLEXITY (PCI)	OUTLOOK GAIN (COG)	DENSITY
Defence	Air & Spacecraft Machinery	Manufacture of air and spacecraft machinery	-0.17	0.36	0.36
	IT & Telecommunications Services	Computer consultancy activities	1.51	-0.07	0.15
	Other Defence-related Services	Security systems service activities	0.40	0.47	0.46
Advanced Mfg.	Electronic & Tech Equipment Mfg.	Manufacture of computers and peripheral equipment	0.07	0.46	0.62
	Engineering & Technical Consulting	Engineering design for industrial processes	1.03	0.31	0.04
	Industrial Machinery & Tools	Manufacture of other special-purpose machinery	-0.44	0.71	1.40
Life Sciences	Medical & Biotechnology R&I	R&D on biotechnology	0.69	0.17	-0.11
	Medical & Pharma Mfg. Products	Manufacture of pharmaceutical preparations	-0.08	0.09	0.10
	Healthcare & Medical Activities	Other professional, scientific and technical activities	0.08	0.60	1.20

MOST COMPLEXITY TO GAIN

IT & Telecommunications Services (PCI 1.51) and Engineering & Technical Consulting (1.03) add the most sophistication — and sit closest to the middle on feasibility.

MOST FEASIBLE

Industrial Machinery & Tools (density 1.40) and Healthcare & Medical Activities (1.20) are nearest to what the region already does, but add the least complexity.

OPENS THE MOST DOORS

Industrial Machinery & Tools has the highest Complexity Outlook Gain (0.71), with Healthcare & Medical Activities next (0.60): both open paths onward.

Note: Bars run from zero; the tick marks the zero line and every column shares the scale -0.60 to 1.65. PCI is complexity, COG is Complexity Outlook Gain — how much moving into an activity opens paths to others — and density is closeness to current capabilities. Values are subsector averages across the activities (SICs) each subsector contains. Above 0.5 is high, -0.5 to 0.5 moderate, below -0.5 low.
Source: New Localism Associates (2025).

The Region Has Significant Opportunities Based On Its Distinctive Strengths

Production-led Niche			Innovation-led Niche			Co-located Production & Innovation			Diversification Opportunities		
Deepen what already works and move it up the value chain. Instruments include R&I grants and incentives, TA, market intelligence, upskilling and reskilling. Tie instruments to a measurable step into a higher-value segment. Defence demand now runs through several of these subsectors.			Connect research to industry so the region keeps the value it creates. Instruments include commercialisation and spin-out support, demonstration funding, and attracting firms that need proximity to the research. Anchor research to local production capacity.			Consolidate leadership where both legs already exist. Instruments include flagship public-private projects of national relevance, national and international investor attraction, sector summits. This is where the region has its strongest claim on national funds.			Extend the supply chain into adjacent, more complex activities. Instruments include subsidies, grants and tax relief for firms entering new products, technology-transfer programmes, reskilling. The trap is chasing complexity far from current capability; start with the nearest openings.		
Subsectors to target (jobs, and annual jobs growth)			Subsectors to target (jobs, and annual jobs growth)			Subsectors to target (jobs, and annual jobs growth)			Subsectors to target (jobs, and annual jobs growth)		
● Clean Power Hydrogen	500	+7.4%	● Other Clean Energy Subsectors	4,175	+9.5%	● Sustainable Mobility	1,575	-14.0%	● Air & Spacecraft Machinery	350	+36.1%
● Sustainable Mobility	1,575	-14.0%	● Energy Transmission & Distribution	375	+0.0%	● Clean Power Hydrogen	500	+7.4%	● IT & Telecommunications Services	12,425	-2.1%
● Waste Management	3,025	-1.8%	● Engineering & Technical Consult.	10,250	+1.5%	● Industrial Machinery & Tools	6,375	-1.8%	● Other Defence-related Services	3,695	+3.7%
● Industrial Machinery & Tools	6,375	-1.8%	● Electronic & Tech Equipment Mfg.	1,270	+1.8%	● Metal & Chemical Materials Mfg.	7,935	-1.9%	● Electronic & Tech Equipment Mfg.	1,270	+1.8%
● Metal & Chemical Materials Mfg.	7,935	-1.9%	● Air & Spacecraft Machinery	350	+36.1%	● Basic Metals	4,275	-0.5%	● Engineering & Technical Consult.	10,250	+1.5%
● Other Fabricated Metal Products	1,500	-0.3%	● Ship Building & Related Activities	70	+7.0%	● Freight Transport by Road	9,000	+5.2%	● Industrial Machinery & Tools	6,375	-1.8%
● Transport, Warehousing & Related	18,500	+6.1%	● Other Defence-related Services	3,695	+3.7%	● Medical & Pharma Mfg. Equipment	2,500	+0.0%	● Medical and Biotechnology R&I	840	+3.3%
● Railways & Civil Eng. Projects	3,250	+3.4%	● Media & Entertainment Production	815	-5.8%	● Healthcare & Medical Activities	61,900	+2.8%	● Healthcare and Medical Activities	61,900	+2.8%
● Medical & Pharma Mfg. Equipment	2,500	+0.0%	● Gaming & Interactive Ent.	155	+14.1%						
Total	45,160	—	Total	21,155	—	Total	94,060	—	Total	97,105	—

● Clean Energy Industries ● Advanced Manufacturing ● Upstream Mfg. & Logistics ● Life Sciences ● Defence (OEMs) ● Creative Industries

Note: Jobs in the subsector and the average annual growth of those jobs between 2018 and 2023, from the ONS Business Register and Employment Survey. Source: New Localism Associates (2025).

South Yorkshire Investment Playbook

Diagnostic: Turning Production and Innovation Capabilities into Growth

THANK YOU!

July 2025 · Revised September 2026 ahead of publication

This report is New Localism Associates' work, and any errors are ours.

NEW
LOCALISM
ASSOCIATES

Nine Sectors, Forty-Five Subsectors

The eight priority sectors in the Modern Industrial Strategy, plus one we defined for South Yorkshire.

Advanced Manufacturing 5 ■ Electronic and Technology Equipment Mfg. ■ Engineering and Technical Consulting Activities ■ Industrial Machinery and Tools ■ Metal and Chemical Materials Mfg. ■ Other Advanced Manufacturing Subsectors	Clean Energy Industries 7 ■ Clean Power Hydrogen ■ Energy Generation ■ Energy Transmission and Distribution ■ Nuclear Industry ■ Sustainable Mobility ■ Waste Management ■ Other Clean Energy Subsectors	Creative Industries 4 ■ Advertising and Marketing ■ Design, Printing, and Publishing Services ■ Gaming and Interactive Entertainment ■ Media & Entertainment Production
Defence 6 ■ Air and Spacecraft Machinery ■ IT and Telecommunications Services ■ Military Fighting Vehicles Manufacturing ■ Other Defence-related Services ■ Ship Building and Related Activities ■ Weapons & Ammunition Manufacturing	Digital and Technologies 3 ■ IT Infrastructure Management ■ Software Development and IT Consulting ■ Telecommunications Services	Financial Services 4 ■ Banking and Credit Activities ■ Financial Services and Securities ■ Insurance ■ Leasing, Investment, and Asset Management
Life Sciences 5 ■ Healthcare and Medical Activities ■ Medical and Biotechnology R&I ■ Medical and Pharmaceutical Mfg. Equipment ■ Medical and Pharmaceutical Mfg. Products ■ Other Related Pharmaceutical Goods and Services	Professional & Business Services 6 ■ Accounting and Financial Consulting ■ Architecture, and Other Technical Services ■ Educational Technology Services ■ Legal Services ■ Management and Business Consulting ■ Public Relations and Communication Services	Upstream Mfg. & Logistics 5 ■ Basic Metals ■ Construction of Railways and Other Civil Eng. Projects ■ Freight Transport by Road ■ Other Fabricated Metal Products ■ Transportation, Warehousing & Related Activities

The ninth is ours. Upstream Manufacturing & Logistics is not an Invest 2035 sector. We defined it to capture industries with a strong South Yorkshire presence whose capabilities enable the high-growth sectors — giving priority to those with a median wage above the national average and classified as tradable by MIT. Counts are of subsectors in the taxonomy, not of SIC codes; the full SIC lookup is in Appendix B. Source: New Localism Associates (2025).

How the Evidence Base Is Built

Two mechanisms — a SIC lookup for jobs and firms, a keyword dictionary for research and patents — feeding one shared taxonomy.

01

Source extract

BRES (jobs) and Companies House (firms) at 5-digit SIC 2007 subclass level, aligned to Mayoral Combined Authority geographies.

02

Assign to subsector

Each observation matched on its SIC code to a unified lookup. Assignment is at the most granular level available; some codes resolve only to four digits.

03

Sum to sector

Subsectors summed to their sector, merging our assignment with The Data City's classification, with no code counted twice inside a sector.

04

Aggregate

Results aggregated by MCA, subsector and year. Per-capita indicators use ONS mid-year population estimates at MCA level.

WHAT WE SET OUT TO ANSWER, AND FROM WHAT

Which priority sectors and subsectors South Yorkshire is strong in; how R&D investment flows into the real economy; how universities and the local ecosystem perform.

Databases. Business Register and Employment Survey (BRES); Free Company Data Product; UK Research and Innovation (UKRI); HE Student Data (HESA); PATSTAT. Cross-referenced to allow regional comparison.

HOW RESEARCH AND PATENTS ARE CLASSIFIED

Dictionary. Built through bibliographic review, aligned to the eight Invest 2035 sectors plus Upstream Mfg. & Logistics; each entry is Sector; Subsector with its keyword list.

Application. An algorithm scans text fields in UKRI and OECD REGPAT and sets binary flags per subsector. A record may match several; insufficient evidence → Unclassified.

Refinements. Word-boundary detection for short or ambiguous tokens (AI, IT, ship, iron, SAF). If a Basic Metals match is driven by "iron" and Life Sciences patterns also appear, it is not assigned to Basic Metals.

Quality control. Three manual review rounds over top grants per subsector and the unassigned pool. The same taxonomy is used for R&I and patents so the two stay comparable.

THREE THINGS TO BE TRANSPARENT ABOUT

Sector figures are not additive.

Twelve SIC codes are assigned to more than one sector — 62090 (other IT service activities) sits in four. A deliberate modelling choice, because computer consultancy genuinely serves both defence and the digital sector, but sector totals cannot be summed to a regional figure.

One code is counted twice inside Clean Energy.

SIC 27900 (manufacture of other electrical equipment) is assigned to both Clean Power Hydrogen and Sustainable Mobility, so its jobs enter that sector's subsector sum twice.

R&I and patents do not use this lookup.

They are classified by the keyword dictionary above. Two separate mechanisms feeding one shared taxonomy.

Where the work stands. The government launched the full ten-year Modern Industrial Strategy in June 2025; sectoral strategies have been released since, and improvements to this methodology continue.

Notes: The full SIC lookup is available as a spreadsheet — one row per code with its description, assigned subsector and sector. The keyword dictionary classifies UKRI awards and patents only; it does not capture Ministry of Defence research funding, which accounts for the large majority of publicly funded defence R&D in the UK and is weighted differently from UKRI's dual-use and underpinning technologies (POST note PN-0766, April 2026). Source: New Localism Associates (2026).

How the Diversification Analysis Works

Economic complexity turns the region's employment structure into a map of what it could plausibly do next.

WHERE THE DATA COMES FROM

BRES 2023	employment by 5-digit SIC 2007, extracted April 2023 — the latest year available
350 authorities	the whole UK except Northern Ireland, at district and unitary level
ONS lookup	the April 2023 district-to-region table, used to match districts to regions
MCA_LA	one cleaned column giving both the local-authority and the combined-authority level

WHAT THIS METHODOLOGY ADDS

The capabilities assessment reads the strengths the region already has. Economic complexity does the opposite: it ranks activities South Yorkshire does not yet do competitively, by how close they are to the capabilities it already holds. Complex activities need many capabilities at once — technology, institutions, talent, logistics — so proximity is what separates a plausible move from an aspirational one.

THE SIX INDICATORS THE ANALYSIS COMPUTES

Definitions and formulas follow the Harvard Growth Lab's Atlas of Economic Complexity; employment is the input, so every activity is included, services and all.

INDICATOR	WHAT IT MEASURES
RCA / LQ	does the region specialise in an activity relative to the national economy? A value of 1 or more means it does.
ECI	the knowledge intensity of an economy, read from the diversity and complexity of the industries it holds.
PCI	how complex an activity is, read from how ubiquitous it is and the capabilities its production requires.
Proximity	how likely a region specialised in one activity is to be specialised in another. Measured activity to activity.
Density	built from proximity: how prepared a given region is to move into a given activity. Measured region by activity.
COG	how much specialising in a new activity opens the door to further, more complex ones. Also called strategic value.

The four selection criteria. All four are applied only where RCA is below 1 — the point is activities the region does not yet do competitively — and the top twenty activities are taken from each. Low hanging fruit weights density 70 / PCI 20 / COG 10; balanced strategy 30 / 60 / 10; long shot 20 / 40 / 40; productive trajectory takes the highest RCA still below 1 where PCI is high.

Notes: Employment data lets every activity into the calculation, but it is national in scope, so the benchmark is other UK regions rather than the world economy. The top twenty cut is a working choice and can be widened. Source: New Localism Associates (2025), from the project's methodological note.

The SIC Codes Behind Each Subsector

Every five-digit SIC 2007 subclass behind the taxonomy, subsector by subsector.

ADVANCED MANUFACTURING

Electronic and Technology Equipment Manufacturing 26110, 26120, 26200, 26511, 26512, 26701, 27900

Engineering and Technical Consulting Activities 62012, 62090, 71121, 71122, 71129

Industrial Machinery and Tools 25620, 25730, 28220, 28290, 28490, 28990, 32990

Metal and Chemical Materials Manufacturing 20110, 22290, 23130, 24320, 24340, 24520, 24530, 25110, 25500, 25610, 25990

Other Advanced Manufacturing Subsectors 46720, 72190, 95120, 95210

CLEAN ENERGY INDUSTRIES

Clean Power Hydrogen 27900

Energy Generation 35110, 42220

Energy Transmission and Distribution 35120, 35130, 35140

Nuclear Industry 24460, 25300

Other Clean Energy Subsectors 43210, 74901

Sustainable Mobility 26110, 27900, 29201, 29202, 29320

Waste Management 38110, 38120, 38210, 38320, 39000

LIFE SCIENCES

Healthcare and Medical Activities 74909, 86101, 86210, 86220, 86230, 86900

Medical and Biotechnology R&I 72110, 72190

Medical and Pharmaceutical Manufacturing Equipment 32500

LIFE SCIENCES (CONT.)

Medical and Pharmaceutical Manufacturing Products 21100, 21200

Other Related Pharmaceutical Goods and Services 46460, 47730, 74901

DEFENCE

Air and Spacecraft Machinery 30300

IT and Telecommunications Services 61900, 62012, 62020, 62030, 62090, 95110

Military Fighting Vehicles Manufacturing 30400

Other Defence-related Services 80100, 80200, 84210, 84220

Ship Building and Related Activities 30110, 33150, 52220

Weapons & Ammunition Manufacturing 25400

DIGITAL AND TECHNOLOGIES

IT Infrastructure Management 62030, 63110

Software Development and IT Consulting 62012, 62020, 62090

Telecommunications Services 61100, 61200, 61300, 61900

CREATIVE INDUSTRIES

Advertising and Marketing 70210, 73110, 73120

Design, Printing, and Publishing Services 17230, 18129, 18140, 58190, 74100

Gaming and Interactive Entertainment 58210, 62011

Media & Entertainment Production 59111, 59112, 59113, 59120, 59200, 90020, 90030

PROFESSIONAL & BUSINESS SERVICES

Accounting and Financial Consulting 69201, 69202, 69203

Architecture, and Other Technical Services 71111, 71112, 71129

Educational Technology Services 62090, 74909

Legal Services 69101, 69102, 69109

Management and Business Consulting 70229, 73200

Public Relations and Communication Services 70210

FINANCIAL SERVICES

Banking and Credit Activities 64191, 64192, 64921, 64929, 64992

Financial Services and Securities 64991, 64999, 66110, 66120, 66190, 70221

Insurance 65201, 65202, 65300, 66210, 66220

Leasing, Investment, and Asset Management 64201, 64302, 64303, 64304, 64305, 64306, 64910, 66300

9TH SECTOR

Basic Metals 24100, 24410, 24420, 24440, 24450

Construction of Railways and Other Civil Engineering Projects 42120, 42990

Freight Transport by Road 49410

Other Fabricated Metal Products 25290, 25930, 25940

Transportation, Warehousing, and Related Transportation Activities 52103, 52219

How the classification was built. We classified SIC codes into high-growth sectors and subsectors, using and refining The Data City's classification. We developed an algorithm that uses keywords to classify UKRI grants and patents based on their descriptions.

Notes: 145 distinct codes and 161 assignments across the forty-five subsectors; sixteen codes sit in more than one subsector, which is why sector figures elsewhere in this deck are not additive. This data was processed in early 2025; later releases are available. We recognise that other work connecting SIC codes to the UK's strategic sectors was already underway, has likely advanced since then, and may offer more up-to-date results. The value we hope to offer is a framework — a way to bring production and innovation, usually analysed separately, into one structure. Source: New Localism Associates (2025).

The Keyword Dictionary Behind R&I and Patents (1 of 2)

How each UKRI grant and patent is matched to a subsector, by the words in its description.

UPSTREAM MFG. & LOGISTICS

Basic Metals iron, steel, Steel Manufacturing, Ferro-alloys, Metalworking, Steel Production, foundry moulding, foundry, non ferrous metals, aluminium, Aluminium Smelting, alumina, copper, Non-Ferrous Metal Smelting, metallurgy, forging, forgemaster*, foundries

Other Fabricated Metal Products architectural metalworks, metal reservoirs, silverware production, screws, bolts, nuts, metal cable, plaited bands, conductors of electricity, coated wire, barbed wire, leaf springs, helical springs, torsion bar springs

Construction of Railways and Other Civil Engineering Projects Construction, Greenbuilding, Build*, Industrial Building, Building Contractors, Real Estate, Concrete Roads, Civil Engineering, Building Construction, railway construction, bridges construction, elevate roadways, general building construction

Freight Transport by Road freight transportation, Freight hauling, Trucking, Heavy-duty trucks, Semi-trucks, Rail transport, Road Freight, Heavy Goods Transport, Land Transport Logistics

Transportation, Warehousing, and Related Transportation Activities warehousing, storage sites, Freight Storage, Distribution Warehouse, Storage for Freight, Land Transport Services, Transport-related Services, Transport Management Services

CLEAN ENERGY INDUSTRIES

Sustainable Mobility Electric Vehicle*, BEV, HEV, EVs, vehicle elec*, EVSE, electric motor*, e-mobility, charging infrastructure, V2G, PHEV, EV charger, level 1 charging, level 3 charging, level 2 charging, charge point, sustainable mobility, automobile hybrid, autonomous electric, bev hybrid, charger obc, ev motor, motor hybrid, battery electric vehicles, EV manufacture

Energy Generation solar energy, solar cell*, photovoltaic, silicon solar, solar panels, wind energy, wind turbine*, offshore wind, fuel enrichment, thermal neutrons, radiological power, reactor fleet, pressurized water reactor, fast neutron reactor, renewable energy*, small modular reactor, electric generation, electric power, cell pv, concentrated photovoltaic, inverter solar, module photovoltaic, blade nacelle, component nacelle, energy blade, nacelle tower, wind blade, Organic Rankine Cycle, piston expander, pv cell, geothermal, biomass, photovoltaic system, PV system, bioenergy

Energy Transmission and Distribution power transmission, electricity transmission, grid infrastructure, High-voltage transmission, Transmission lines, Smart grid, Grid modernization, Transmission substations, Renewable energy integration, energy storage, Distributed energy resources

Clean Power Hydrogen Green Hydrogen, liquid hydrogen, clean hydrogen, hydrogen fuel, renewable hydrogen, hydrogen electrode*, bipolar plate*, P2G, green fuel, electrolyzers, green ammonia

Nuclear Industry SMR, small modular reactor, modular reactor, nuclear fusion, nuclear fuel, atomic energy, fission energy, Nuclear, intermediate-level waste, PWR, BWR

Waste Management waste recycling, plastic waste, material recovery, waste sorting, e-waste recycling, waste management, industrial waste, waste disposal, organic waste, Radioactive Waste, Green Recycling, secondary raw materials

CLEAN ENERGY INDUSTRIES (CONT.)

Other Clean Energy Subsectors environmental consulting, Environmental assessment, Sustainability consulting, Environmental audits, Air quality monitoring, Carbon footprint, LEED certification, Environmental regulations, energy collectors, street lighting, electrical signals, lighting systems, carbon capture, GHG removal, battery storage

ADVANCED MFG.

Metal and Chemical Materials Manufacturing material*, material\$, materials sciences, polymer*, silicone*, polysilicon*, Injection Molding, Seal Structure, elastomeric, rubber, membrane, carbon nanotubes, industrial gas*, grain*, plastic, graphene*, coating, Fluid*, Ballast, Piezoelectric microactuators, blade, baseplate, Crystalline, casting, cold rolling, light metals, nickel superalloys, chemical manufacturing, polymer film, thermal coatings

Industrial Machinery and Tools advanced manufact*, 3D print*, Robot*, IoT, automation, additive manufacturing, Computer-aided, 3D-print*, industry 4.0, manufacturing innovation*, three-dimensional, printer, autonomous system*, machine tool*, advanced machine*, Predictive maintenance, Supply chain digitization, machining, smart factory, automated manufacturing

Engineering and Technical Consulting Activities engineering design, engineering consulting activities, industrial process design, smart factories, technical advisory, systems engineering, design engineering, Computer vision, cognitive computing, data switching network*, IoT devices

Other Advanced Manufacturing Subsectors equipment repair, repair of communication equipment, repair of electronic component, machinery repair, scientific innovation, prototyping, patent research, fiber optic repair, machinery maintenance, electronics servicing, metal distribution, industrial metals, electrical repair, molecular engineering, non-covalent interactions, supramolecular systems

Electronic and Technology Equipment Manufacturing Quantum*, qubit*, superconduct*, trapped ions, Deep learning, Neural networks, Natural language processing, NLP, Printed circuit boards (PCB), Microelectronics, Electronic components, Integrated circuits (ICs), infrared detectors, ultrafast lasers, glass-based, AM equipment

LIFE SCIENCES

Medical and Biotechnology R&I Biopharma*, Medic*, medicine\$, diagnostic, genomic*, CRISPR, biomedic*, tissue engineer*, clinical trial*, biomarker*, regenerative medicine, gene expression biologi*, biobased*, Semiochemical, Organoid, pheromon*, genetic*, immunotherap*, biomedical, biologic, cell therapy, gene therapy, cancer, autoimmune, bacteria, medicament, probiotic, prebiotic, medication, genetic engineering, omics, regenerative medicine, gene expression, synthetic biology, enzyme therapy, enzyme inhibitor, synthetic therapeutics, care technology, care test technology, Physiological, diabetes, ebola

Medical and Pharmaceutical Manufacturing Products pharma, pharmaceutical manufacturing, Active pharmaceutical ingredients (API), Biopharmaceuticals, Over-the-counter (OTC) medications, Injectable drugs, pharmaceutical coatings, Drug formulation, Vaccine, antibiotics, pharmaceutical quality control, drug therapy, biomaterials, dosage, drug delivery

Notes: An asterisk marks a stem, so "forgemaster*" also matches forgemasters. Keywords were built through bibliographic review and refined against the grant and patent descriptions themselves. Source: New Localism Associates (2025).

The Keyword Dictionary Behind R&I and Patents (2 of 2)

Continued: life sciences, defence, creative, digital, professional services and financial services.

LIFE SCIENCES (CONT.)

Medical and Pharmaceutical Manufacturing Equipment biosensor*, biomanuf*, bioinfor*, medical equip*, ultrasound, magnetic resonance imaging, computed tomography, X-ray Machine, PCR, Automated Blood Analyzers, Flow Cytometers, LASIK Surgical, electromyography, medical device, EIS, MRI

Healthcare and Medical Activities general medical, medical activity, medical diagnostic, health centre, hospital, medical treatment, medical examination, nursing, hospital*, radiation diagnosis, surgical instrument, surgery, electrotherapy, magnetotherapy, radiation therapy, ultrasound therapy, therapeutic activity, medical activities, medical devices, public health

Other Related Pharmaceutical Goods and Services pharmaceutical distribution, drug supply chain, medical wholesale, pharma logistics, retail pharmacy, pharmacist services, medicament sales

DEFENCE (OEMS)

Air and Spacecraft Machinery composite fuselage*, thrust vector*, turbofan*, ramjet*, scramjet*, fly-by-wire*, autopilot*, airfoil*, de-icing*, aircraft, aviation, aerial vehicles, aerospace, SAF

Weapons & Ammunition Manufacturing railgun*, guided missile, infrared homing*, armor-piercing, counter-drone*, HEAT warhead, cluster munition*, drone swarm, projectiles, missiles, small arms, weapon*, artillery, pistols, explosives, ammunition

Military Fighting Vehicles Manufacturing combat drones, military-grade drones, Infantry fighting vehicles, tank, armoured amphibious, Ballistic skirt*

IT and Telecommunications Services Intelligence services, Tactical communication systems, 5G defence applications, Signal intelligence, Cyber warfare systems, AI-driven cybersecurity, Defence-Cybersecurity, Defence ERP systems, Encrypted networks, Cybersecurity, Radar systems

Other Defence-related Services military*, Defence strategy, Homeland security, Diplomatic security, Foreign affairs, Defence activities

Ship Building and Related Activities shipbuilding, shipbuid*, maritime activities, ship, hydrofoil*, naval architecture, submarines, hydrodynamics, ballast*, anti-fouling*, marine propulsion, Port Operation*, cargo hand*, Cargo Shipp*, Bulk Carrier Operations

CREATIVE INDUSTRIES

Gaming and Interactive Entertainment gaming, video game, immersive technology, Game engines, Game design, Game programming, Game testing

Media & Entertainment Production motion picture, video production, television programme production, sound recording, music recording, digital creative, entertainment software

Advertising and Marketing Digital advertising, Programmatic advertising, Search engine marketing (SEM), Marketing, Advertising, Media relations, digital marketing

Design, Printing, and Publishing Services Paper stationery manufacturing, Bookbinding services, Custom bookbinding, editorial, priting, publishing, Graphic design, print design

DIGITAL AND TECHNOLOGIES

Software Development and IT Consulting artificial intelligence, AI, technology strategy, deep learning, Machine learning, Predictive Analy*, systems integration, software, unit testing, IT, software development
Telecommunications Services telecomm*, fiber optics, digital information, electric communication, wireless communication network, broadcast communications, connectivity, cloud comp*, wireless transmission, telecom services, satellital transmissin, mmWave

IT Infrastructure Management next-gen comput*, high-performance hardware, computing devices, Hardware security module (HSM), technology infrastructure, digital infrastructure, telecom Infrastructure, Edge computing, data centre

PROFESSIONAL & BUSINESS SERVICES

Educational Technology Services EdTech, Educational technolog*, Learning management systems, E-learning platforms, Online education tools, EdTech solutions, Open educational resources, Classroom automation tools, Digital textbooks, STEM education tools, classroom management

Legal Services legal service*, solicitors, barristers at law, legal activities, lawyer, patent activity, copyright agents, law serv*

Accounting and Financial Consulting accounting activity, accounting services, consulting services, auditing activities, tax consultancy, Bookkeeping, accounting, tax consultancy, auditing

Architecture, and Other Technical Services architectural activities, urban planning, landscape planning, architectur*, Architectural design, Urban design, Sustainable architecture, Green building design, Urban revitalization, Space planning, Urban development, City planning, Public space design

Management and Business Consulting market research, management consultancy activities, business consulting, operations consulting, firms consulting

Public Relations and Communication Services public relations, media relations, Internal Communication, external communication, institutional relations, brand communication

FINANCIAL SERVICES

Banking and Credit Activities banks, Credit granting, credit activities, Commercial banking, Credit analysis, loan\$, loan origination, Credit unions, Loan servicing

Leasing, Investment & Asset Mgmt. Investment, Asset Management, investments, fund management, brokers, investment companies, venture capital, Investment funds, financial markets, financial leasing, Leasing services, Investment strategies

Insurance insurance agent*, life insurance, health insurance, property insurance, non-life reinsurance, pension funding, risk evaluation, damage evaluation, insurance

Financial Services and Securities Financial Services, financial service activities, Fintech*, financial consultants, capital markets, asset management

How R&I Funding Is Attributed

One grant, several institutions: the attribution rule decides which region gets the money.

WHERE THE DATA COMES FROM

UKRI Gateway to Research

the primary source for grants and their partners

Dimensions

cross-validation of awards and amounts

HESA

institution profiles and harmonised names

ONS

resident population and employment denominators

HOW A GRANT REACHES A SUBSECTOR

A **keyword algorithm** built from an extensive literature review classifies each grant and patent by its description, into 45 subsectors grouped in 9 sectors — the eight Invest 2035 priority sectors plus Upstream Manufacturing & Logistics, which we defined. Grants starting between 2012 and 2023 are included, and **each award is distributed quarterly** across the project period, so a multi-year grant lands in the years it was actually spent. Institution names are harmonised before any region or university is compared.

FOUR ATTRIBUTION SCENARIOS — AND THE ONE THIS DECK USES			
Two decisions multiply out: whether a shared grant goes wholly to the lead institution or is split half to the lead and half among the collaborators in proportion, and whether national research centres hosted in a region count as that region's funding.			
SERIES	HOW A SHARED GRANT IS SPLIT	RESEARCH CENTRES	SOUTH YORKSHIRE TOTAL
coll_total	50 % lead + 50 % collaborators	included	£622.6 M ← used throughout this deck
coll_no	50 % lead + 50 % collaborators	excluded	£621.2 M
lid_total	100 % to the lead institution	included	£612.6 M
lid_no	100 % to the lead institution	excluded	£611.2 M
A fifth and sixth series isolate the centres alone — coll_centre and lid_centre, £1.4 M for South Yorkshire — and in the collaborative series the total equals no-centres plus centres exactly, which is the check that the three treatments are consistent with each other.			

Why the collaborative split. The four series move together and South Yorkshire's total varies by under 2 % between them, so the choice is not what drives the numbers. What it does change is credit on large multi-partner grants — and a region that only ever joins someone else's consortium should not read as having no research.

Notes: Totals are the whole grant series in the file, not the 2020–2024 window used on the ranking slides. Our R&I metric measures UKRI awards only; the Ministry of Defence funds over 80 % of publicly funded defence R&D outside this dataset, which applies equally to every region, so relative rankings hold. Source: New Localism Associates (2025).