

# Investment, not subsidy: could semiconductors unlock the UK's productivity problem?

**Howard Rupprecht of CSconnected argues that government investment into high-value manufacturing can catalyse private capital and create 'sticky' jobs.**

**T**he UK government's October 2024 Budget delivered a clear signal: semiconductors matter. The investment announcement into Wales's compound semiconductor cluster marked Westminster's recognition of its strategic importance as the world's only integrated compound semiconductor supply chain, not only offering leading research and laboratory space, but also the established manufacturing infrastructure to scale UK sovereign resilience within this growing, globally competitive industry, which is predicted to exceed \$1 trillion by 2030.

As countries worldwide scramble to compete in the component technologies so critical to numerous ambitions, from net zero to EVs, from communications to quantum, the UK is one of the few countries with the infrastructure and talent to compete. And it is hubs such as the South Wales cluster — offering established manufacturing facilities managed by international businesses such as Vishay and KLA, alongside scaling businesses — that not only help to keep production from going overseas, but typically employ two to three times more people than fabless and IP companies elsewhere in the UK.

"Manufacturing has developed a bad name over the past few decades as Government subsidies into the sector have often been seen as a bailout to an ailing sector. This couldn't be further from the truth when it comes to advanced tech clean manufacturing, such as compound semiconductors," says CSconnected's managing director Howard Rupprecht. "Government investment in high-value manufacturing capabilities drives tomorrow's economy. This type of strategic government investment unlocks private capital, creates sticky jobs, and builds sovereign capability. That's investment, not subsidy."

## Fuelling the technologies of tomorrow

Compound semiconductor materials such as gallium nitride (GaN), silicon carbide (SiC), indium phosphide (InP), and gallium arsenide (GaAs)

are foundational to critical systems driving decarbonisation, connectivity, and computing efficiency. In electric vehicles, power electronics built on SiC and GaN deliver efficiency gains that extend range and reduce charging times. In telecommunications, they underpin 5G and 6G networks, photonics, and sensing technologies. In data centres, they improve AI infrastructure energy efficiency as computational demands surge.

South Wales brings together advanced materials research, epitaxy, pilot fabrication and commercial manufacturing within a single, concentrated geography. The cluster supports 150mm and 200mm wafer processing across wide-bandgap power devices, RF technologies and photonics, with capability spanning GaN platforms, SiC device development, and InP-based optical and quantum components. This depth of capability — securing technologies and supply chains where domestic strength translates into strategic advantage — helps to position the UK competitively in a growing global market.

## Resilience: why local capability reduces national risk

The pandemic and subsequent geopolitical tensions exposed the fragility of just-in-time global supply chains. When borders closed and shipping fractured, countries with domestic manufacturing capability maintained production, whilst those reliant on distant suppliers faced delays and shutdowns.

South Wales offers a rare asset in the sovereign resilience race: an integrated compound semiconductor ecosystem spanning research and development, prototyping, and high-volume manufacturing. This vertical integration reduces dependence on overseas fabrication and shortens the pathway from research to market. Critically, it creates 'sticky' infrastructure — capital-intensive facilities that cannot easily be relocated. The Newport Wafer Fab facility — which has been operational since 1982 and is now owned by Vishay Intertechnology following their recent acquisition



and £250m investment announced in March 2025 — exemplifies this permanence and the continued confidence that global players have in the region.

In an era of supply chain uncertainty, embedded industrial capability is a strategic asset, providing continuity when global systems falter.

### How to maximize government investment

Any government investment is significant, but its impact will depend on deployment. Strategic targeting can remove specific bottlenecks currently constraining growth.

First, skills development. The global semiconductor industry faces a talent shortage of 250,000 to 300,000 people by 2030. South Wales has a structural advantage through Cardiff and Swansea universities, yet demand outstrips supply. An investment that accelerates skills programs would have an immediate effect.

Furthermore, many SMEs lack the capability to supply to semiconductor manufacturing. Targeted funding through programmes such as CSconnected's Supply Chain Development Programme can bring local suppliers to the required standards, strengthening the cluster and capturing more value locally.

Lastly, enabling infrastructure. Public investment in shared infrastructure (advanced prototyping facilities, cleanrooms, testing capabilities) de-risks private

investment decisions and accelerates commercialisation. Government investment is the catalytic funding that unlocks multiples of private capital.

### Case study: how private investment follows capability

Vishay Intertechnology's £250m investment into Newport Wafer Fab, announced in March 2025, demonstrates how public support can bolster private investment commitments. The facility represents the UK's largest semiconductor manufacturing site, directly supporting over 500 high-skilled jobs and indirectly sustaining hundreds more across the regional supply chain. The investment will boost production at the state-of-the-art factory, where it will make advanced silicon carbide semiconductors, which are integral to EV production and clean energy technologies.

### The national opportunity: double down on the industries with the biggest return

Similarly, KLA Corp's expansion in South Wales — announced last year and supported by £6.25m from Cardiff Capital Region and £750,000 from Newport City Council — has created a new 237,000ft<sup>2</sup> manufacturing and R&D facility at Imperial Park employing 750 people. The expansion takes place within a region that has invested for over a decade in research capability,



**The evidence: a cluster already delivering economic impact.**

shared infrastructure and skills development. Over the past decade, more than £850m has been invested in research, pilot fabrication, manufacturing and innovation facilities across the region, creating over 1250 high-skilled jobs. The lesson is clear: strategic public investment creates the conditions where private capital will follow.

So, how can this help Britain's productivity problem? It is now well documented that output per worker has stagnated for over a decade, with wage growth lagging behind peer economies, and the gap with competitors continuing to widen. With government investment funds under pressure, any investment of public money must be evidence-based, aiming to scale further what is already working.

Clean manufacturing offers productivity gains that are difficult to replicate in services. A semiconductor fab can double output without doubling headcount through automation. And design and manufacturing facilities typically employ two to three times more people than fabless or intellectual property companies. These high-skill roles in process engineering, materials science, and advanced manufacturing offer well-above-average wages, and rewarding, future-proof careers.

South Wales has already seen the impact of this model. The compound semiconductor cluster has supported over 3000 jobs across the Welsh economy, delivered gross value-added of £350m, and has exports totalling £466m, strengthening the UK's trade position.

This is performance, not potential. The cluster is delivering measurable economic return today, which will only be multiplied tomorrow with the right investment commitments from the government.

**Public investment builds confidence and certainty**

This type of public investment will provide certainty. Private companies make long-term capital commitments when they are confident that the ecosystem will endure. Government investment signals stability and reduces political risk, particularly for multi-national corporations evaluating where to locate advanced manufacturing.

It helps retain and attract global players. Semiconductor manufacturing is a globally competitive market. Companies such as Vishay and MicroLink Devices could locate facilities anywhere. They chose South Wales because the ecosystem works: skills, suppliers, research capability, and infrastructure align. Sustaining that advantage requires continued investment.

It accelerates commercialisation and scale-up. The UK has historically struggled to help startups scale effectively domestically, with many businesses relocating for later-stage growth where incentives are stronger. Edwards Vacuum has announced significant manufacturing expansion in the USA, supported by CHIPS Act incentives, illustrating how government policy can influence where advanced manufacturing capacity is built. Public investment in translational infrastructure, prototyping facilities, and scale-up support can help to ensure that UK innovation generates UK economic value and that growth happens domestically.

If the UK is serious about productivity, the fastest route is to scale what is already delivering. South Wales could serve as a national testbed for what effective cluster investment looks like: targeted, evidence-based, and focused on removing constraints. The model is replicable. The returns are measurable. The opportunity is immediate.

**How the UK can convert momentum into national advantage**

2026 presents a rare alignment: global demand for compound semiconductors is accelerating, the UK possesses a functioning, integrated cluster with proven capability, and the government has signalled intent through their budget investment announcement. The question now is execution and ambition.

Investment can be transformative if deployed strategically, removing skills bottlenecks, strengthening supply chains, and de-risking private investment. But the larger opportunity extends beyond Wales. The UK must provide the competitive conditions that keep innovative companies here through their entire growth journey.

Other nations are not waiting. The USA has committed hundreds of billions through the CHIPS Act, and the European Union through the European Chips Act. The UK does not need to match these figures, but it does need a coherent strategy that plays to domestic strengths.



South Wales demonstrates what is possible when research excellence, manufacturing capability, and public support align. The semiconductor cluster is not a regional curiosity. It is a national asset, and treating it as such could unlock productivity gains that extend far beyond one industry or one region. ■

[www.csconnected.com/projects/projects/cconnected-supply-chain-development-programme](http://www.csconnected.com/projects/projects/cconnected-supply-chain-development-programme)

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Howard Rupprecht was appointed managing director of CSconnected in March 2024. With over 35 years of experience in the global electronics and semiconductor sectors, he combines deep technical expertise with strategic insight into investment, supply chain development, and stakeholder engagement.

Rupprecht's career began in electronics manufacturing at Lucas Electronics, before moving into international sales, marketing and business development for advanced production equipment in Silicon Valley. He later held senior leadership roles at VTT Technical Research Centre of Finland, where he specialized in technology commercialization and ran the Micronova R&D fab, Northern Europe's largest semiconductor research facility.



Returning to the UK, Rupprecht joined Rockley Photonics to build semiconductor supply chain capabilities and now supports cluster growth at CSconnected —helping to attract investment, promoting local, regional and national economic impact, and raising awareness of the semiconductor industry's importance.

## The CSconnected compound semiconductor cluster

CSconnected is a not-for-profit organisation focused on expanding the South Wales compound semiconductor industry. As the world's first compound semiconductor cluster, CSconnected brings together a unique community of

academic institutions, prototyping facilities, and global high-volume manufacturing capabilities.

The Cluster fosters cutting-edge research, innovation and global leadership, positioning Wales and the UK to compete globally in

critical sectors such as 5G communications, autonomous and electric vehicles, advanced medical devices, sustainable technology and next-generation consumer electronics.

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