How the UK can build a more resilient and productive semiconductor industry

techUK is the trade association for the technology sector in the UK. We have over 1000 members, the majority of which are UK-based SMEs, based around the United Kingdom. Our members employ 1.1 million people across the UK, with a turnover of £329bn in 2023, and an estimated annual growth rate of 10%. We have prepared this briefing to help MPs and their teams understand key issues for the UK technology sector.

If you would like to learn more about techUK's work on semiconductors please see the below links:

1. A UK Plan for Chips
2. Open Letter to the Secretary of State: Using the National Semiconductor Institute to become a Semiconductor leader
3. Unleashing Innovation: Semiconductor Day

More briefings, both from ourselves and techUK's members, can be found on our online briefing hub.

Why are Semiconductors important to the UK?

Also known as ‘chips,’ semiconductors are present in almost every device we use: From day-to-day consumer electronic devices, vehicles, healthcare technology and defence technology. Furthermore, they underpin the key technologies that are shaping today’s world and tomorrow’s possibilities, such as AI. The importance of semiconductors to the global economy is colossal, with the semiconductor industry itself projected to value $1 Trillion by 2030.

UK industries are reliant on the global supply of semiconductors: A supply shortage that started in 2020 was estimated to have disrupted global GDP growth by 1% in 2021.¹ Alongside economic insecurity, disruptions in supply chains can cause potential disruptions to essential infrastructure and risks to national security. As such, building a resilient semiconductor supply chain is of critical importance for many Governments around the world, and this is reflected in fierce global

¹ https://post.parliament.uk/research-briefings/post-pn-0721/
competition. The USA, the European Union and China, are all launching significant investments to guarantee their stake in that growth.2

This can be tricky as the semiconductor supply chain is inherently global, and complex. When the imports of raw materials, equipment and components needed for semiconductors are considered as well, then supply chains become even more complicated.

Different regions have different specialities, creating interdependencies and vulnerabilities. While the semiconductor supply chain is certainly global, production remains heavily concentrated between five leading nations.3 Taiwan produces over 60% of the world's semiconductors, making this nation a global leader in the semiconductor supply chain.4 The investment needed for any one nation to compete with this output is considerable: The US CHIPS act designates approximately $106 billion to build their already strong capabilities in semiconductors to compete with this.5

Where is the UK placed in global semiconductor supply chains?

It is widely acknowledged that the UK's major strength is in IP and design, where the UK is a significant world-leader in this space. There are a predicted 130 companies working across IP and design. These companies are often centred around leading universities and supported by strong innovation and financial institutions, as well as good governance and regulation. In the global supply chain, it is essential to continue to protect the IP generated by UK companies and build upon this strength.6

The UK also has emerging leadership in compound semiconductors, which are semiconductors created using more than one chemical element. Though not exclusively, the compound semiconductor specialism of the UK is clustered around South Wales.7 However, speciality exists across the UK, such as the Clas-SiC Wafer Fab in Scotland.8

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3 https://www.csis.org/analysis/mapping-semiconductor-supply-chain-critical-role-indo-pacific-region
4 https://www.economist.com/special-report/2023/03/06/taiwans-dominance-of-the-chip-industry-makes-it-more-important
6 There are UK Government schemes, such as the Patent Box scheme, which reduces the rate of corporation tax payable on profits resulting from products that include a patented invention, and Innovate UK IP audit grants. It would be helpful to make sure those schemes, and others, are joined up with the National Semiconductor Strategy so that the UK gets the best possible outcome
https://siliconsemiconductor.net/article/117656/UK_semiconductor_strategy_A_patent_attorney%E2%80%99s_perspective
8 https://clas-sic.com/
Supporting the development of these areas is The National Semiconductor Strategy. Published in May 2023, this Strategy commits up to £1bn in targeted support across IP and Design, R&D, and Compound Semiconductors. This one billion figure, on the face of it, was dwarfed by the commitments of the US, EU, China and South Korea. However, the UK’s goal differed from these strategies. Instead, it would seek to deliver on a selected unique selling points and playing to UK strength. The Infrastructure Feasibility Study, a recommendation of the National Semiconductor Strategy, further looks at how to build infrastructure to support clusters of compound semiconductor businesses.  

What will determine the UK’s success in semiconductors?

techUK was pleased to see many points of its UK Plan for Chips identified as key goals in the National Semiconductor Strategy. However, there is still a lack of Government co-ordination in the next steps following this Strategy. For example, areas such as skills shortages continue to impede the growth potential of the Semiconductor industry, with an estimated 80% of UK firms involved in Chip Design having unfilled vacancies. Therefore, we believe the next Government should take up the mantle of the National Semiconductor Strategy to deliver an ambitious and co-ordinated plan of action across the recommendations, enabling the UK semiconductor industry to thrive.

To do this, the next Government must act quickly on delivery and utilise the wealth of knowledge, expertise, and potential that the domestic semiconductor industry has. Industry remains ready to work with Government and academia to carve out a greater place for UK semiconductors in a rapidly changing and increasingly competitive global economy.

techUK has reflected on the progress made since the publication of the National Semiconductor Strategy, and sets out the following five-point plan to ensure the National Semiconductor Strategy delivers its strategy into action.

1. Retain our position as a global leader on chip intellectual property and design
2. Incentivise investment in advanced designs, manufacturing, and DeepTech, through innovative funding and R&D support
3. Promote innovation and support scale ups through access to markets and private capital

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9 https://engage.ifm.eng.cam.ac.uk/uk-semiconductor-infrastructure-initiative-2023/
10 https://www.techuk.org/resource/a-uk-plan-for-chips.html
4. Nurture the skills we need for the chips industry

5. Develop resilient supply chains through international engagement

In a recent open letter to the Government, techUK, alongside members of the Chips Coalition, called for many of the above points to be delivered through a National Semiconductor Institute. This Institute will play an important role developing a strong co-ordinating voice for UK semiconductor industry, creating value from British innovation.¹¹

How can I learn more?

If you would like to know more about how the UK can lead in semiconductors, you can read our UK Tech Plan and Seven Tech Priorities.

techUK can also arrange a call with yourself and our policy managers so we can brief you on this topic in more detail. If this would be of benefit to you, please contact Archie.Breare@techUK.org and Alice.Campbell@techUK.org.

techUK is also able to arrange a meeting between yourself and a member company of ours who has premises in your constituency if possible. This would provide you with a photo opportunity and allow you to discuss the importance of this issue further with a company operating in your constituency.