



National semiconductor strategy of 19th May 2023

**Clas-SiC Wafer Fab Perspectives
Infrastructure, Scale Up and Investment**

David Clark, Technology Manager

From concept to prototype to manufacture

Introduction to Clas-SiC: The UK's Only Commercial SiC Wafer Fab

Clas-SiC
W A F E R F A B



- Clas-SiC Wafer Fab is the world's first dedicated, **open**, 150mm, **pure-play** foundry to manufacture **Silicon Carbide** power devices
- Clas-SiC combines the best & most experienced talent in the industry, with **state of the art Silicon Carbide tools & processing**, making Clas-SiC a unique start-up
- Clas-SiC offering provides **fast prototyping** cycle times for SiC wafer fabrication to **accelerate R&D** and time to market for new device designs supporting **Net Zero** and **'More than Moore'** through **reliability proven** process design kits and a library of "off the shelf" Process Module IP

Clas-SiC Status over the last year

500% revenue growth

>100% increase in number of customer accounts

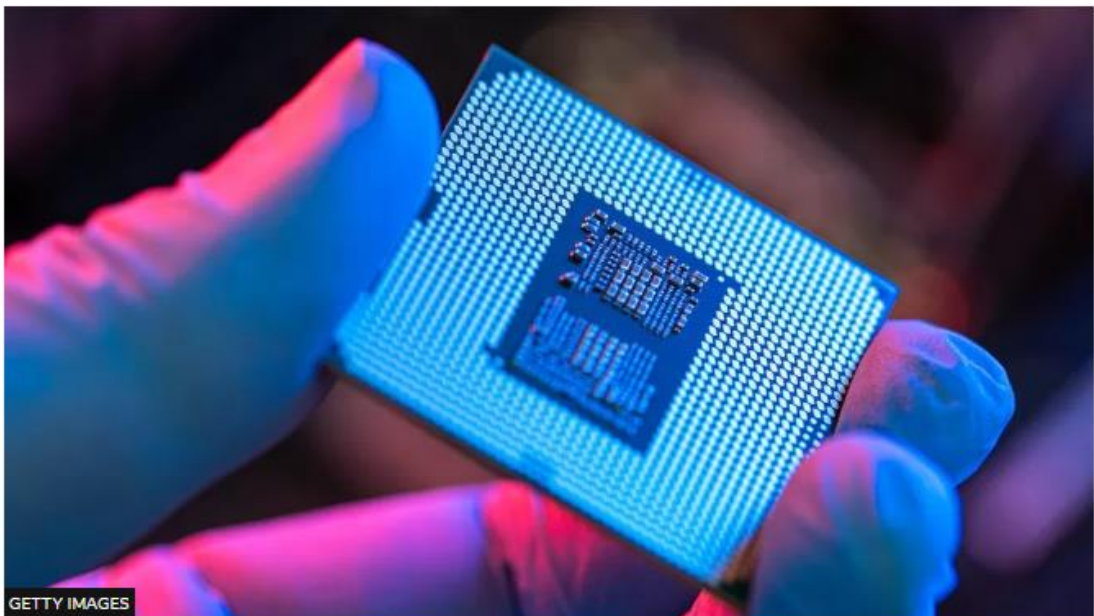
**Moved from 5 day to full 24/7 working week,
6 months early**

Jobs increased from 50 to 70; 100 planned for 2024

Thoughts on Initial Reactions

Critics say £1bn for UK chip industry not enough

5 days ago · Comments



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By Chris Vallance
Technology reporter

Critics have branded the UK government's delayed £1bn package of support for the semiconductor industry as "insignificant".

- The government press release said:
“up to £1 billion in the next decade to improve access to infrastructure, power more research and development and facilitate greater international cooperation, with up to £200 million over the years 2023-25”
- This compares with a leading edge TSMC style wafer fab cost of about £18 billion, so the funding package doesn't seem significant, at first glance
- But what is the government strategy really about?
“boost the UK's strengths and skills in design, R&D and compound semiconductors”
- Therefore, used wisely, **as targeted**, that £1 billion could make a significant difference as compound semiconductors do not normally require leading edge capability wafer fabs
- So that doesn't mean setting up a cohort of capital intensive new or refurbished wafer fabs

Wisely targeting the investment

- Clas-SiC believe that targeting **existing infrastructure** for investment would be a prudent move, as it:
 - **Builds on the UK's strengths** of existing wafer fab capabilities, and importantly, **does not compete** with them
 - **Safeguards and potentially creates jobs**
 - Hits the ground running **saving years**
 - **Reduces risk** – organisational, financial, technical
- Just one example:
 - **Clas-SiC** started up in 2017
 - **Spent £50M**; now cash self-sufficient
 - Technology developed and **reliability proven**
 - Healthy and growing customer base with **demand** for more
 - Needing **£24M** to implement defined **2.5X capacity** expansion



So a small part of £1 billion would go a significant way to help just Clas-SiC **scale up** our part of the **open-access infrastructure to support commercial R&D and SME growth**

Scaling and Open Access

- The scaling challenge is not unique to Clas-SiC, going into multiple other sectors of the UK's Compound Semiconductor industry
- Our belief is that the UK Scaling and Open-Access Wafer Fab challenges can be addressed on a “**kill two birds with one stone principle**,” in keeping with the principles of the National Semiconductor strategy:
“we will launch a UK Semiconductor Infrastructure Initiative to support commercial R&D and SME growth. This is for the creation of a new national institution to bring the sector together and the development of enabling infrastructure for UK start-ups and SMEs. This may include an expansion of the UK's compound ‘open foundry’ ecosystem, and greater access to chip design tools/IP and prototyping facilities for silicon”



This could be cost-effective, achievable within the £1 billion budget and win-win if implemented well

The Challenge of Scaling Up

- Scaling up is not a challenge unique to Clas-SiC

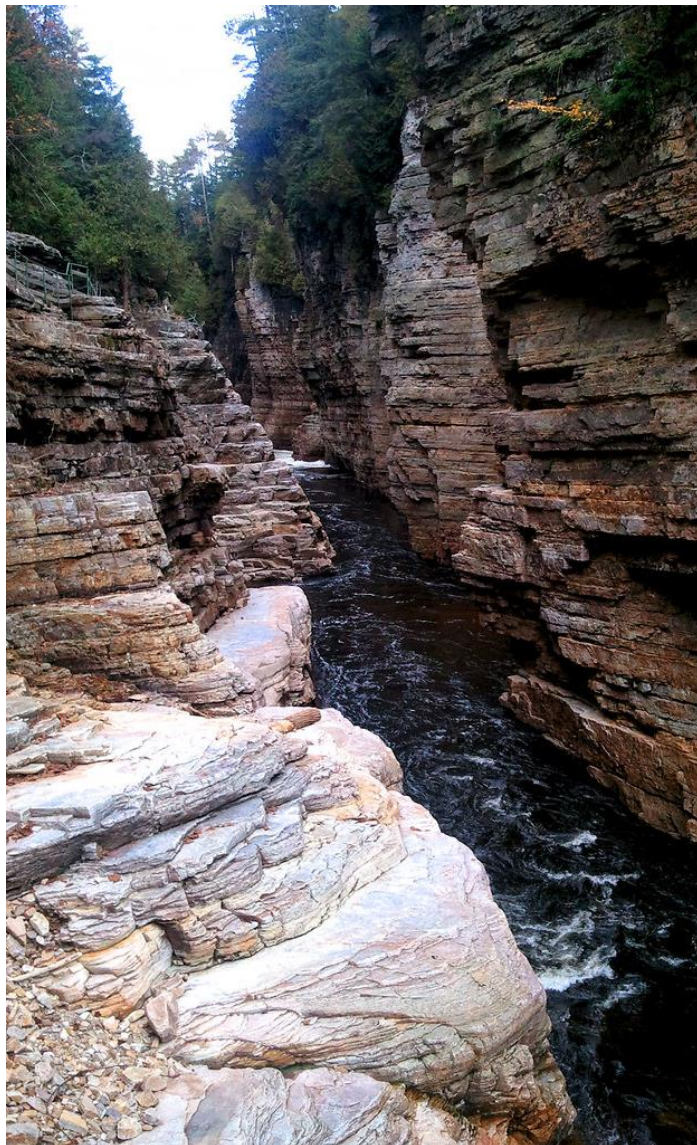


Rae Hyndman, Clas-SiC's Managing Director said that *"in my many interactions with fellow leaders in the UK Semiconductor Industry, a frequently recurring theme is the challenge of securing funding for scale-up"*

- The UK funding climate seems to be weighted against technology investments
- Technology funding is more available internationally, particularly from China, the USA via its \$52 billion Chips Act, the EU with €43 billion, Japan and South Korea.
- So wisely targeted government **investment in existing semiconductor infrastructure** would be most welcome, with £1 billion going further than the initial reactions from the media suggest



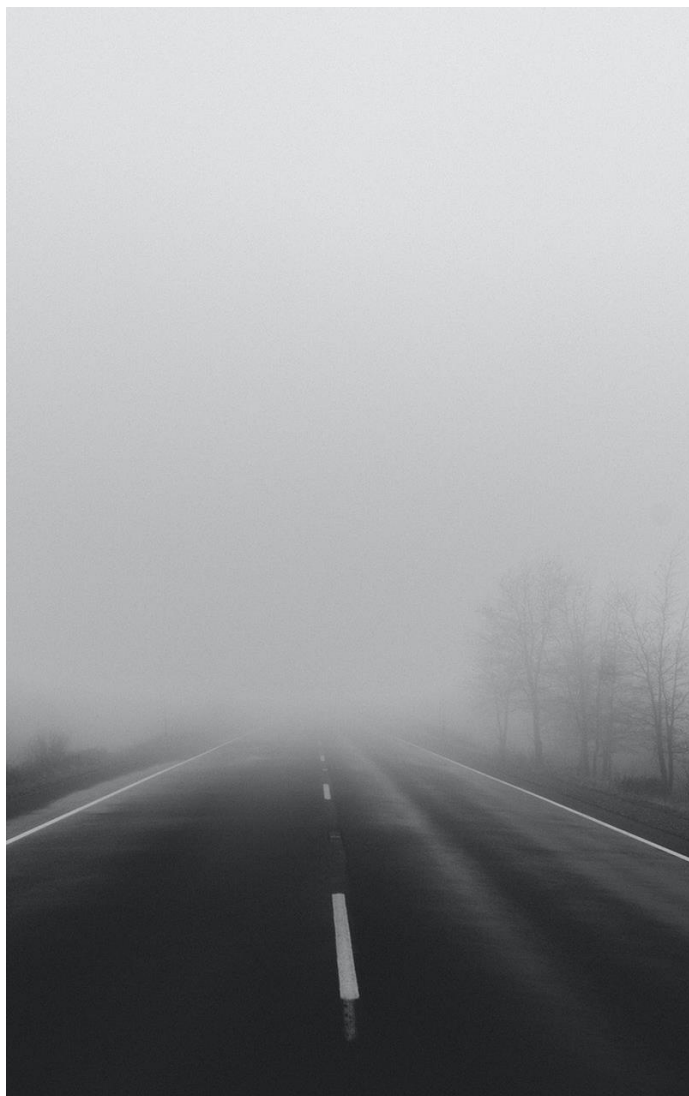
Crossing the 'Investment to Scale Up' Chasm



- Government aspirations for the semiconductor sector are laudable and go a good way with existing R&D schemes such as ESPRC, DER and APC, now joined by the new policy:
“we will improve access to infrastructure that will reduce barriers and catalyse growth for UK firms, particularly for start-ups and SMEs ... facilitating the journey from lab to fab”
- The Clas-SiC view is that this is all of the above is welcome, but that the UK’s pressing problem of turning this into sustained manufacturing jobs which remain within the UK, still needs to be tackled
- The semiconductor strategy press release gives a glimmer of hope:
“Furthermore, the government will announce plans by the autumn on support for investment in the semiconductor manufacturing sector”

Currently however, beyond investing in infrastructure to assist start-ups and SMEs, a semiconductor investment chasm still exists in the UK

Lack of clarity on how to enable Scale Up



- The new semiconductor strategy document does state that:
“Through the Department for Business and Trade the government **supports** businesses in attracting the right kind of investment and entering new markets. The Department for Business and Trade has recently **expanded** its High Potential Opportunities tech programme, to drive foreign direct investment into emerging sub sectors including compound semiconductors. The Department for Business and Trade also **has** a dedicated Science and Technology Directorate focused on supporting the international expansion of UK companies in the National Science and Technology Council priority technology sectors, including semiconductors. The Department for Business and Trade is also **focusing** the Digital Trade Network in Taiwan to increase our capability to support semiconductor trade and investment. **We will** also promote the sector, and put it at the heart of **London Tech Week 2023** to bring the sector, government and investors together.”
- From the Clas-SiC perspective, this has not been well communicated to industry, with none of the above known to us, and we doubt if we are alone
- At the moment, there is lack of clarity as to how this will really make a difference

Clas-SiC Summary

- Great to see the £1 billion National semiconductor strategy announcement, which if implemented well could go further than the media reactions predict
- An effective implementation could end up with a win-win for existing semiconductor industry and the government infrastructure strategy
- Existing R&D schemes available to semiconductors are good and the new strategy can only help further
- But long term, scale up of the semiconductor industry is still a challenge that the government seems to want to help with, but a clear, effective strategy seems elusive
- The government autumn statement will therefore be really important for semiconductor investment





Thank you

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