ESPI European Space Policy Institute

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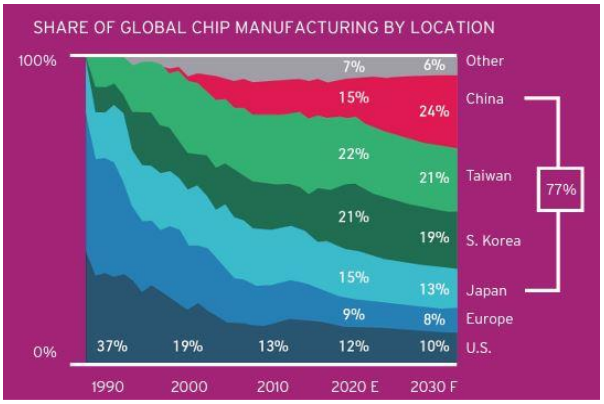
WINNING THE FUTURE - WHAT EUROPEAN SPACE POLICY NEEDS TO LEARN FROM SEMICONDUCTORS

Transformative technologies impact our daily lives. They are all pervasive across sectors of the economy. A world without e-commerce is hard to imagine today. The disruptive impact of AI may bring the deepest systemic changes nations and people will face in the Digital Age. Such disruptive transformation has far reached economic, societal and geopolitical repercussions.

Europe historically has been at the forefront of future-shaping innovation, defining centuries. The printing press in 1439 by Johannes Gutenberg for the spread of knowledge, the steam engine in 1763 by James Watt, powering the industrial revolution, Guglielmo Marconi in 1901 demonstrating the first transatlantic radio signal. And many more. However, over the past decades Europe lost its pioneering role. This is most visible in the digital revolution, which has been dominated by the computer and software industries symbolised by the "Silicon Valley", initiated with the invention of semiconductors in 1947 by William Shockley. While in 1990, Europe was home to almost half of the global chip manufacturing, its share fell to below 10% by 2020. In contrast, China's share rose from zero to 15% and is projected to reach 24% by 2030, surpassing Taiwan with 21%. Europe missed the opportunity to develop market and industry capability in one of the future key sectors of the economy. Recently, this cumulated in a semiconductor supply chain crisis, affecting numerous key industries such as automotive. Decades with a lack of a clear European policy vision results in a cost of inaction measured in Trillions of Euros today. The European Chips Act, re-Acts to cushion the impacts of Europe's systemic dependence. Multiple billion Euros of public investment will be made available in the hope of regaining an EU's share of global chip manufacturing of 20%. In total, the package represents at least €43B in public and private investments.



Credit: Semiconductors Manufacturing Association

As Europe takes costly corrective action in an established market, another new and game-changing industry is at an inflection point today. A global space race is unfolding, a race of geopolitical influence as much as in a conquest for new markets on Earth and in outer space. Space solutions in Earth observation, navigation and communications are key enablers of the digital economy, of a green future, of crisis response systems, of security and defence solutions, Technologies developed for exploration endeavours, for example, in-orbit manufacturing, and closed loop life support systems, are bound to further impact our terrestrial economies and societal needs. An ongoing study by ESPI together with BCG demonstrates the catalytic benefits of space on the wider economy. It also shows that the space and semiconductor sectors have many commonalities. Both are disruptive and all-pervasive through different industry sectors. Both are R&D intensive and globally in the focus of public policy action for industrial capacity building. Both are comparable in market size and growth rates, with a CAGR of 5% expected by 2030. Most importantly, both show a similar multiplier effect (factor 6-7) into the broader economy, with space solutions today resulting in a significant GDP level impact of €3.1T. The benefit of space-enabled weather forecasting alone is estimated by the World Bank at $160B annually. A 2018 study by PwC found that 6.2% of the EU's GVA was dependent on space infrastructure. As this is being understood by some leaders, efforts are initiated to develop synergies between champions in key sectors of the economy and space policy actors, such as by the Swiss Space Office with pharmaceutical, the German Aerospace Center with automotive, and the Luxembourg Space Agency with finance. This demand and market driven space policy could be part of the "European way" called upon so often. It could connect public investments in space infrastructures and services with that of industry champions, in synergy with ministries like energy, health, transport or digital.

This requires urgent space policy action, to preserve Europe's 15% share of the €100B global public investment in space, to scale up to the ambition of 1/3 of market share as set by the recent "Revolution Space" report. It may well be the European challenge of the decade, to establish more co-creation of space programs between public and private space actors and sectorial leaders, already investing billions in innovation, for developing opportunities for private and public markets and for societal benefit.

Europe in space needs to act now, to avoid the same fate as in semiconductors. A Space Act in 2040, would no longer allow us to recover the space left unchartered today. Decisive policy action can still secure the evolution of Europe's space industry, European capability and capacity, security of supply and choice of action. Ultimately, this will contribute to prosperity and peace for future generations.

Yours sincerely,

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Director of ESPI