# 2026 Policy Brief

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Funded by ACCIÓ Catalonia Trade & Investment Generalitat de Catalunya Gobierno de Cataluña Supported by N-ABLE Innovation Investment, Faster

ESRA
European Semiconductor Regions Alliance

## 1 Dominant ESRA Capabilities

**Strong application and tech segments with clear European capabilities**

### Industrial automation

Largest application market in the mapping. It links to strong EU capabilities in sensors, actuators and control-oriented chips.

### Automotive applications

Second strongest application market. It links to EU strengths in control, MCU, power management and application-specific electronics.

### Telecom / 5G-6G connectivity

A major covered market. The mapping suggests links with key EU tech like ASIC, optoelectronics, design and systems capabilities.

### Healthcare / Medical Technologies

A relevant covered market. It points to needs in sensing, diagnostics and high-reliability electronics.

## 2 Underinvested EU Capabilities

**Critical gaps that limit Europe's ability to scale and compete**

### Foundry & specialty foundry

Among the weakest value-chain segments. This points to limited fabrication depth. It also shows a thin foundry base.

### Packaging-only & certification

These functions are present but weakly represented. They lag behind equipment, design and systems/OEM capabilities.

### Leading-edge memory & compute

These segments remain marginal in the mapping. IPU, DRAM, NAND SRAM, NVRAM, FPLD, NOR and ROM are especially concerned.

### Niche and emerging markets

Defence, robotics, renewables and non-automotive mobility are visible. These are associated to high growth potential.

## 3 Possible spearheads

**Examples of interregional collaboration and investment routes**

### Sensors & actuators for industrial automation

Build on Europe's strongest mapped application market. Link sensors, actuators, MCUs and IoT/edge capabilities to industrial automation demand.

### Automotive embedded electronics

Use Europe's automotive base as a deployment route. Connect MCUs, ASICs, sensors and actuators with embedded control, safety and mobility applications.

### Power electronics

Target energy, renewables, grids and EV demand. Link discrete devices, application-specific analog, sensors and power-oriented system needs.

### Secure & high-reliability embedded systems

Address defence, aerospace, security and safety-critical applications. Connect FPGA, ASIC and embedded-system capabilities with reliability and certification needs.

### Foundry, manufacturing & packaging sovereignty

Fill the most structural gap. Strengthen foundry, specialty foundry, packaging-only and back-end links, with direct connections to equipment and industrial deployment.

## 4 What the mapping suggests

**Priority insights from the ecosystem mapping and interviews**

### A clear need for scale-up funding

Crucial need for scale-up and industrialisation investment and financing

### Missing bricks in the value chain

Some critical value chain functions are not present in Europe or not well connected.

### Strong capabilities offer the ground for leadership

Including in areas such as equipment, design and system/OEM or software and firmware

## 5 Bottlenecks

**Structural constraints limiting Europe's semiconductor ecosystems**

### Valley of death

Lack of industrialisation and scaling capacity, together with persisting pilot lines distance from industrial & market demand.

### Access to scale-up finance

Industrial champions such as start-ups but especially scale-ups struggle to secure risk capital (VC/PE), as do industrialisation projects.

### Fragmentation and capability gaps

Capabilities and support systems are scattered, with missing value-chain functions, tech or raw material dependencies.

### Skills, cost base and infrastructure pressure

Talent shortages, non-harmonised programmes, high OPEX/CAPEX and infrastructure constraints impact the EU position.

### Administrative and framework conditions

Permitting, state-aid complexity & bureaucracy combine with the need to stimulate demand and unlock national levers.

## 6 Recommendations

**Addressed to ESRA Regions, European institutions and Member States**

- **Jointly invest** in a limited set of spearhead areas to reduce fragmentation, concentrate effort and resources, while anticipating market traction and trends in emerging and leading applications areas.
- **Build interregional routes** that connect specialised assets across design, pilot lines, testing, packaging, demand users, supply-chain capabilities and industrial deployment pathways. This, starting with matchmaking activities to initiate and grow collaborations.
- **Create blended public-private scale-up finance**, including the creation of an interregional scale-up fund gathering patient capital and aiming for large tickets. In addition, leverage EU, national and other regional funding and financing mechanisms.
- **Institutionalise the ESRA as to make it the permanent coordination and visibility platform** with a shared EC Task force. It should tackle matchmaking, best-practice exchange, shared training programmes, influence and interregional investment development.
- **Integrate cross-regional capabilities** ranging from shared access to pilot lines, cleanrooms, Chips Competence Centres and skills programmes, to strategic investments in strategic raw materials access and under-developed capabilities.
- **Build an efficient and coherent regulatory framework** at EU, Member States and regions: simplify rules, improve permitting and state-aid conditions, mobilise demand-led and tax-based incentives, and embed semiconductors into sovereign sector support.

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## Setting the ground of the following four Blocks of recommendations

**1/ EU regional semiconductor ecosystems face 8 dominant obstacles**. Global competitors are not only funding technology. They build manufacturing capacity and provide heavy incentive packages to concentrated ecosystems. Europe remains scattered and struggles to scale and industrialize. Key obstacles encompass:

1. **Persisting Valley of Death**, with a clear lack of scaling, industrialisation and manufacturing capacity (e.g., commercial fabs or large cleanrooms), as well as a persisting distance between pilot lines and markets moulded by industrial demand.
2. **Lack of scale-up and industrialisation financing,** as innovative SME champions face a lack of or difficult access to European venture capital and private equity – essentially due to the tech and financial risks associated with lengthy returns and intense competition.
3. **Fragmentation** of R&D&I capabilities across EU regions but also support system and instruments as well as scattered links between start-up and corporates.
4. **Scattered or incomplete value chains**, from the difficult access to Strategic Raw Materials to specific value chain segments (packaging, special equipment, foundries…). The lack of territorial attractiveness leads some capabilities to even flee the continent (e.g., losses in capabilities such as Electronics Manufacturing Services and Printed Circuit Board production).
5. **Human capital, talents and skills**, encompassing the broader challenge of growing and retaining a skilled workforce as well as the lack of harmonized programmes.
6. **The European Union (EU) "cost base",** entailing risky scaling and mass production CAPEX but also non-competitive OPEX (raw materials, energy, water, nitrogen, labour, gas).
7. **Administrative burden**, from EU to Member States and covering permitting, State Aid, rules and procedures, as well as the lack of stable regulatory framework.
8. **Inefficient collaboration structure**, with a scattered ecosystem while global competitors act centralized, IP and visibility-related obstacles to collaboration.

**2/ Interregional collaboration and investment: the missing brick**. Joint action is therefore required to turn European assets into coordinated investment routes. ESRA is the platform that can connect regional capabilities across the value chain. ESRA regions therefore need to act and invest in complementarity, synergy and/or to fill in absolute gaps in the EU semiconductor value chain.

➥**The European Semiconductor Regions Alliance (ESRA)** comes as the central player to expand Europe as a competitive, resilient, and sustainable semiconductor location. It is an alliance of European regions with proven semiconductor industries including suppliers and strong R&D, that has come together to promote the importance of the semiconductor industry for the economic development of our regions, countries and Europe.

### Evidence base of this policy brief

**The First ESRA Strategic Intelligence exercise**. This policy brief is grounded into the first participatory strategic intelligence jointly developed by ESRA Regions. Funded by the Agency for Business Competitiveness ACCIÓ (Catalunya, ES) and supervised by the investment advisory firm N-ABLE, this exercise mobilized collective inputs from ESRA regional representatives and intermediaries. Their active involvement led to the constitution of a first mapping of ESRA semiconductor capabilities as well as a set of policy recommendations.

**Ground for the recommendations**. With 1852 entities put forward by regional representatives across the Alliance, and a total of 4165 identified across ESRA Regions, the resulting mapping provided hints on existing semiconductor value chains and technologies as well as resulting collaboration opportunities. It was complemented by 20 consultation interviews and an Alliance workshop to further refine the analysis of trends, obstacles and policy recommendations presented in this policy brief.

## BLOCK 1. ESRA STRATEGIC POSITIONING

**Recommendation 1.1: ESRA Regions should jointly invest in a selection of '*spearhead*' areas**

**Joint investment** is meant to end fragmentation and concentrate resources as per respective specialisation profiles of ESRA regions. Joint investments can either leverage common strengths across regions (e.g., chip design and fabless) or fill in gaps such as missing segments in the value chain (e.g., advanced packaging and chiplets). Any such prioritization shall be operated by regional administrations backed by relevant industrial and technological experts able to anticipate on upcoming market traction in leading sectors (e.g., AI, defence, robotics, etc.). Joint investments may range from R&D&I funding and scale-up investment but also enabling initiatives such as joint talent programming (e.g., for digital chip design) depending on the core needs of each spearhead area.

**Recommendation 1.2: ESRA should become the sustainable, central interregional platform for interregional semiconductor collaboration**

The ESRA is widely recognized as the one vehicle that can efficiently coordinate regional ecosystems and provide them with both visibility and a cohesive backbone. Its **institutionalization** shall be a key step to establish a true collaboration forum across operational and policy spheres backed by proper resources and institutional capacity. Its operations shall start with further implementing its current agenda while expanding toward sharing best practices across operational and policy layers, education and training programmes, and exerting EU influence. Beyond this agenda, the ESRA shall aim to develop and implement "*Interregional Action Verticals*" (see Block 2.)

## BLOCK 2. INTERREGIONAL ACTION VERTICALS

**Recommendation 2.1: ESRA Regions should implement matchmaking actions to connect and engage regional stakeholders into concrete collaborations**

This is the first concrete step in making ESRA the main EU forum where joint collaborative projects and investments can be initiated. ESRA and its members should implement **matchmaking activities** to further connect pilot lines and industrial demand, start-ups and corporates, across the full semiconductor value chain. Chips Competence Centres are a key mechanism to leverage in that respect, with dedicated resources and a structured agenda that converging toward ESRA's ambitions.

**Recommendation 2.2: ESRA Regions should jointly finance interregional innovation and industrial scale-up investments**

The main priorities are scaling and industrialization. This action line therefore concerns scale-up companies in the first place, but also emerging champions such as leading-edge start-ups as well as the gap between pilot lines and mass production. Possible pathways to materialize such investment can entail the creation of a mechanism to align and blend funding streams, but also the creation of a dedicated (possibly public/private) **joint scale-up investment fund** that offers patient capital and may leverage other EU sources.
In parallel, European funding streams (I3, HEU, etc.) but also national funding dedicated to tech transfer and scaling may be leveraged to support regional champions.

**Recommendation 2.3: ESRA should support the build-up and integration of under-invested supply chain and industrialization capabilities**

**Strategic investments** should be undertaken to address gaps in the European ecosystem, such as the lack of access and sometimes 98+% dependency on China concerning EU Regions' access to strategic raw materials (e.g., Gallium for GaAs/GaN, Germanium, Rare Earth Elements…). Another example is the of the lack of shared access to pilot lines and Chips Competence Centres, or the need for joint or shared investments in strategic assets such as an EU "*pre-competitive foundry*".

## BLOCK 3. RECOMMENDATIONS TOWARD EU INSTITUTIONS

**Recommendation 3.1: Adapt and dedicate financial support to interregional semiconductor investments**

In conjunction with ESRA vertical action lines, European Institutions should allocated dedicated financial resources and support to semiconductor scale-up companies and projects meant to cross the so-called "*Valley of Death*". Such resources could materialize through the setting up of a joint **scale-up investment fund** in which not only regions but also European institutions (European Commission, EIB, etc.) would contribute with patient capital. Such approach should be associated with a long-term horizon, and European institutions could further support with leveraging private co-investors while promoting the Made In Europe.

**Recommendation 3.2: Embed European support with semiconductor investments that generate Cross-Regional Added Value**

ESRA members call for European institutions to support and fund SME's cross-regional access to semiconductor tech infrastructures and pilot lines (e.g., cleanrooms, special equipment, etc.). Funding programmes can in addition provide a baseline to further **embed semiconductor** development within the existing support to sovereignty industry such as defence and energy. A similar approach can be taken when considering the convergence between policy priorities such as the green transition and semiconductor innovation, both of which could be formally linked in existing calls and funding mechanisms.

**Recommendation 3.3: Engage in a series of legislative harmonization and streamlining efforts with the support of a dedicated EC-ESRA Task Force**

The setting up of a joint **DG CONNECT – ESRA Task Force** is seen as a key acceleration mechanism through which policy feedback can be provided to the European Commission services across a wide range of topics. Among possible areas of interest, one can refer to the alignment between regional regulations and European standards, the adaptation of State Aid rules (such as for First-of-a-Kind/FOAK investments), security, certification and testing, contracting rules as well as cross-legislation alignments (quantum, AI, automotive, etc.). Other administrative areas may be considered, such as the definition of "undertaking in difficulty (UID) in certain jurisdictions.

## BLOCK 4. RECOMMENDATIONS TOWARD MEMBER STATES

**Recommendation 4.1: Adapt and tailor support instruments to the peculiarities of semiconductor needs and challenges**

First in line are **tax-based incentives** which may be developed as to reduce the fiscal burden not only weighting on the shoulders of companies but also investors. Other leads include the creation of energy price incentives, support to long-term energy price contracts/PPAs, as well as investments in skills development programmes or the co-financing of interregional investments as per previous recommendations toward EU institutions and ESRA Vertical Actions.

**Recommendation 4.2: Leverage the potential of Public-Private Partnerships (PPPs) and demand-side instruments**

Member States have the latitude to leverage PPPs as an operational arm for semiconductor policy implementation: though they often concentrate heavier resources than regional governments, they retain enough agility to do so. While PPPs can be key to initiate flagship investment projects, **innovation procurement and lead-user initiatives** also stand as relevant pathways to leverage demand as to steer European semiconductor development while maintaining its strategic fit with public policy priorities. Other tracks may be explored, such as concerning enabling conditions (e.g., improving the energy and grid infrastructure).

**Recommendation 4.3: Alleviate the administrative burden linked to public procedures**

This recommendation first stands as a general incentive to reduce bureaucracy and streamline all possible public procedures and rules. However, specific avenues can be mentioned, such as the possibility to "*parallelise*" **permitting procedures** (instead of maintaining a sequential approach to permitting steps), or to fast-track critical and/or FOAK investment projects. These tracks stand as essential differentiators in any industrialisation process, and if not tapped into, remaining bottlenecks may be damaging to any scale-up initiatives.