ESNA Compendium

Building a competitive Europe: the role of startup and scaleup ecosystems

Volume: Talent and Entrepreneurial Culture
Joint Volume III & IV

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Building a competitive Europe: the role of startup and scaleup ecosystems

Objectives, best practices, and correlations to give Europe the optimal administrative conditions for Startups and Innovation

For further information on ESNA's activities, please visit our website www.esnalliance.eu/en

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About ESNA

Founded as a direct result of the EU Startup Nations Standard of Excellence Ministerial Declaration in March 2021, ESNA is committed to transforming Europe's startup landscape by fostering a robust, interconnected, and competitive entrepreneurial environment within Europe, that drives innovation and economic prosperity across the continent.

About the Network and Strategic Initiatives Department

The Network and Strategic Initiatives Department intends to harness the startup ecosystem stakeholders' network to support on policy trends, strategies and initiatives that are aligned with the achievement of bringing Europe to the forefront of the global startup ecosystem.

Disclaimer

Views and opinions expressed in this document do not necessarily reflect the position of the European Union regarding each topic covered in this report. The insights presented in this publication are based on desk research and expert dialogue, and the content is independent of ESNA's institutional viewpoint.

Network & Strategic Initiatives Department*

Co-authors: **Carolina Rossi, Marine Desoche**

Production support: **Sebastião Ribeiro**

Main Contributors

Advisory Board: **Ana Barjasic, Serena Borbotti-Frison, Sam Eshrati, Martina Fitzgerald, Sabrina Gülck (Co-chair), Vit Horky (Co-chair), Omar Kandil, Sacha Michaud, Clark Parsons, Markus Raunig, and João Trigo da Roza.**

ESNA: **Arthur Jordão, Linda Capusa**

Graphic Design: **Pedro Carvalho**

Supported by insights and data from: **Agnieszka Żur** (Krakow University of Economics) and **Christian Friedl** (FH JOANNEUM).

**N&SI Department led the development of this document, from research design and interviews to strategic analysis, drafting, and final editorial direction. Their leadership and deep understanding of the European startup ecosystem were central in shaping the recommendations made in this Volume.*

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Foreword

In a period defined by shifting geopolitical dynamics and global competition, Europe's ability to innovate and preserve its strategic autonomy relies on a robust foundation - its people, a forward-looking regulatory framework that fosters innovation, and an environment attractive to investment. Together, these elements enable Europe to lead in shaping the digital and technological future. This volume explores how the European Union's competitiveness and sovereignty will hinge on its ability to cultivate, attract, and retain the talent that fuels entrepreneurship and drives breakthrough innovation - within a regulatory framework that enables it and an environment that remains attractive to investment. The Talent and Entrepreneurial Culture Volume presented here addresses this principle, serving as a key component within the broader EU Startup and Scaleup Strategy. Following the foundational work of the ESNA Compendium, this document forms an integral part of a four-volume series structured around five strategic pillars designed to strengthen Europe's startup and scaleup ecosystems. This Volume focuses on two essential drivers of innovation: talent - skills, education, training and human capital - and entrepreneurial culture, reflecting the mindsets, risk management and values that underpin an active innovation economy. Developed through extensive collaboration with ESNA's Advisory Board and Partners, this document merges strategic foresight with empirical analysis to provide actionable policy guidance. It identifies structural challenges from persistent brain drain and fragmented mobility frameworks to cultural aversion to risk, while outlining targeted recommendations that include fast-track visas, expanded entrepreneurial education, incentives for private sector investment in talent development and pan-European stock option reform.

The richness of this Volume lies in its dual perspective that connects Europe's innovation ambitions with tangible, human and social capital and an evidence-based approach grounded in comparative policy assessment and best practices. From Estonia's digital leadership to Finland's gaming sector, this work highlights many examples on how cohesive talent strategies and entrepreneurial values can position Europe as a global hub of innovation excellence. Throughout its chapters, this document offers a structured narrative from contextual analysis and policy evaluation to practical recommendations and a roadmap for implementation. Together, these elements aim to foster a robust talent pool and an entrepreneurial culture that empowers people to take risks, learn from failure and scale ideas with global impact. Ultimately, the initiatives proposed here reinforce a shared vision of a Europe where innovation is not confined to specific regions or sectors but embedded across society, where entrepreneurship is celebrated as a driver of progress and talent is recognised as the cornerstone of sovereignty and competitiveness.

Through collaboration, foresight and decisive action, Europe can unlock the full potential of its human capital and ensure that the entrepreneurial spirit continues to shape the continent's future. To achieve this, Europe must evolve into an environment where startups can scale efficiently, innovation is embedded across sectors as a driver of long-term prosperity, and talent development and entrepreneurial culture are actively supported as strategic assets.

Arthur Jordão
Executive Director, ESNA

Executive Summary

Between growing geopolitical instability and global competition, the EU's competitiveness and innovation sovereignty will depend on its ability to harness its talent and entrepreneurial mindset. This volume, focused on talent and entrepreneurial culture, is part of a four-volume strategy revolving around five building blocks to strengthen Europe's startup and scaleup ecosystems. It is centered around two key foundations: talent - skills, education, training and human capital - and entrepreneurial culture, ranging from risk management to values that drive innovation.

Despite its large legacy in research and innovation which emerged during the industrial revolution and still exists today through world-leading universities - the continent has underperformed in turning talent into global tech leaders, especially since the 2008 financial crisis. Without a significant shift, Europe risks becoming a second-tier player in the innovation economy.

Human and social capital are critical to startup creation and long-term prosperity. However, structural gaps persist:

- Brain drain continues, as top talent leaves for more attractive ecosystems.
- Skill shortages in key sectors (e.g. AI (Artificial Intelligence), green tech) are growing.
- Capital fragmentation and inconsistent frameworks (from business creation procedures to stock options) make it harder for startups to scale across borders.
- Fear of failure remains a cultural barrier, discouraging risk-taking among founders, investors, and institutions.
- Education systems rarely include entrepreneurial training, leaving young Europeans underprepared for innovation careers.

A historical perspective shows that Europe missed major digital shifts in the 2010s due to fragmented markets and regulatory caution. Now, new challenges - from AI to quantum, clean energy to defence tech - demand strategic autonomy and home - grown talent. This volume connects the need for a robust talent pool and innovation culture directly to Europe's sovereignty and competitiveness. This approach is explored in chapter I, while chapter II assesses relevant policies established to foster talent and entrepreneurial culture in the EU.

Chapter III focuses on critical Industries, linking talent strategies to top EU priorities such as AI, clean energy, and semiconductors. It argues for specialised training programmes, better public-private partnerships, and international recruitment. Best practices in chapter IV, such as Estonia's digital leadership and Finland's gaming sector, show how the right mix of culture and talent policies can produce unparallel innovation.

Developed through a collaborative process involving ESNA's Advisory Board (AB) members, partners and internal team, the volume includes policy recommendations grounded in real-world needs. Key proposals include:

- Fast-track visas and unified mobility frameworks to attract and retain global talent.
- Expanded entrepreneurial education across all levels, including in academia.
- Incentives for private sector investment in talent development.
- Pan-European stock option reform to reward and retain employees.
- Cultural campaigns to normalise failure and promote entrepreneurs as national assets.

Ultimately, the volume positions talent and entrepreneurial culture as strategic assets. It envisions a Europe where innovation is widespread, startups thrive, and people are empowered to take risks. Success means building a continent where founding a company is a respected path, failure is part of learning, and innovation is central to Europe's identity and global role. By treating people and culture as the foundation of competitiveness, the volume echoes Ursula von der Leyen's call for "Europe's independence moment".

Document Structure

In order to continue our support of the Startup and Scaleup Strategy under five building blocks, a pathway has been created by connecting two visions: an EU-level approach and a national-level approach. This was carried out thanks to strategic thinking based on the selection and analysis of best practices, supported by historical and data-driven knowledge of Europe, under one specific topic.
The document was designed to be as concise and practical as possible by incorporating roadmap recommendations, key performance indicators (KPIs), and a comparison of best practices into its structure.
All of this logic is set within the framework of three main pillars that are consistently present in this document:

1. Roadmaps, KPIs & benchmarks: A practical guide
2. Making strategy tangible: correlating actions, objectives, and possible outcomes
3. The architecture of strategy: pathways, performance, and practice

This document is the continuation of ESNA's Compendium - published in November 2024. It is a document that analyses Europe's past, present and future by acknowledging the previous 20 years within the European startup ecosystem. This policy-centred document is one of a four-part series of volumes, each of them focusing on a strategic pillar (Regulatory Barriers, Investment, Entrepreneurial Culture, Talent and IP & Tech Transfer) that will be instrumental in the upcoming EU Startup and Scaleup Strategy.

The document suggests major actions that are both evidence-based and forward-looking:

Talent

- **Reskilling and upskilling**

1) Building new opportunities for specific target groups
2) Assess which skills are needed in Europe today
3) Setting up a framework for a freelancer economy

- **Talent attraction**

1) Integration and talent attraction for EU candidate countries
2) Accelerating mobility
3) Facilitating access to grants

- **Talent retention and re-attraction**

1) European identity - Get started now!
2) Compensation and contractual conditions
3) Academia & talent retention
4) Building an attractive career vision for graduates across Europe

Entrepreneurial Culture

- **Leveraging entrepreneurship through positive role models;**
- **Scaling and upgrading entrepreneurial education;**
- **Strengthening communities, peer-networks, and knowledge transfer; and**
- **Measuring Europe's entrepreneurial culture.**

These actions were developed thanks to the strong guidance of ESNA's Advisory Board, acting as our voice from the market. The actions are rooted in cross-sector strategic thinking and collaborative insights stemming from the Network & Strategic Initiatives Department.

Finally, this document is a backbone for future steps, aligned with ESNA's vision to position Europe at the forefront of the global startup ecosystem.

Strategic document structure: This Talent and Entrepreneurial Culture Volume is structured to progressively guide the reader from context to action, aligning strategic insight with operational feasibility:

1. Setting the Scene
The imperative of talent and mindset in Europe's competitiveness

2. Mapping Europe
Policy landscape and EU-level frameworks on talent and education

3. AB Insights
Two proposed actions with supporting evidence and KPIs

4. National Policy Mapping
Comparative assessment of Member States' approaches

5. Suggested Solutions and KPIs
Concrete policy proposals and performance frameworks

6. Final Recommendations

ESNA Volumes' methodology

Key contributor	Strategic thinking
ESNA Compendium	**Foresight analysis:** identifying signals of change across sectors. **Horizon scanning:** tracking innovation across the EU and globally. **Strategic intelligence gathering:** drawn from expert white papers, market reports, and innovation indexes. **Systems thinking:** mapping how different actors and policies interact within the innovation ecosystem.
Advisory Board meetings	**Design sprints:** framing the problem and rapidly iterating solution pathways (online and in-person AB meetings). **Structured expert:** forecasting and consensus building. **Sharing insights:** 1:1 meetings to share inputs and follow up on actions content.
ESNA Partners contribution	**Participatory co-creation:** involving stakeholders in defining problems and solution framing. **Ecosystem mapping:** identifying roles, interdependencies, and resource flows. **Asset-based thinking:** leveraging strengths already present in the ecosystem. **Knowledge exchange labs:** facilitating cross-border learnings and policy co-design.
Best Practices Catalogue	**Benchmarking & comparative analysis:** identifying global frontrunners and patterns of success. **Case study methodology:** deep dives into implementation and context with qualitative insights. **Expected impact on the startup ecosystem:** researching of expected impact each practice can bring to the ecosystem.
Desk Research	**Policy review & legal scan:** understanding institutional context.

A strategic and deep dive volume with an overview of the European startup ecosystem and concrete actions to the challenge faced

Talent

- Reskilling and upskilling
- Talent attraction
- Talent retention and re-attraction

Entrepreneurial Culture

- Leveraging entrepreneurship through positive role models
- Scaling and upgrading entrepreneurial education
- Strengthening communities, peer-networks and knowledge transfer
- Measuring Europe's entrepreneurial culture

I. Setting the Scene

Key Themes

- Mindset is infrastructure. Without a risk-smart culture, money and laws won't convert to scale.
- Talent is strategy. Europe must win the global competition for people, not just projects.
- Skills are the new industrial policy. Align lifelong learning to critical tech and defence needs.
- Simple beats perfect. Frictionless cross-border scaling is worth more than new subsidies.
- Savings must meet startups. Financial literacy + SIU/CMU = citizen-powered innovation.
- Communities compound. Dense networks create alumni flywheels and repeat successes.
- Universities are launchpads. From labs to ventures, make entrepreneurship the default path.
- Failure teaches speed. Iteration tolerance raises Europe's innovation metabolism.
- Sovereignty is built, not declared. Scaleups are the backbone of strategic autonomy.

Europe is recognised for its world-class universities and research centres as well as its industries based on fundamental sciences and engineering. The region is particularly strong in the green tech (renewable energy industries created 1.2 million jobs in the EU27 in 2021[1]) sector, but also health (approximately €1.2T Gross Value Added [2]) and manufacturing (approximately €550B Gross Value Added). Robust support frameworks such as Horizon Europe and the European Innovation Council (EIC) and leading legislation such as the General Data Protection Regulation (GDPR) and the AI Act position Europe as a leader in several strategic fields. However, a third of European unicorns have moved to the United States (US) in search for new opportunities.

Europe is now 30 years behind the US when it comes to its local startup ecosys-

[1] Borbon, Y., Moreno, C., & Markianidou, P. (2023). *Monitoring industrial ecosystems: Energy – Renewables. Analytical report.* Technopolis Group. https://monitor-industrial-ecosystems.ec.europa.eu/sites/default/files/2023-12/EMI%20Renewable%20industral%20ecosystem%20report.pdf

[2] European Commission. (n.d.). European Monitor of Industrial Ecosystems. Retrieved September 2025, from https://monitor-industrial-ecosystems.ec.europa.eu

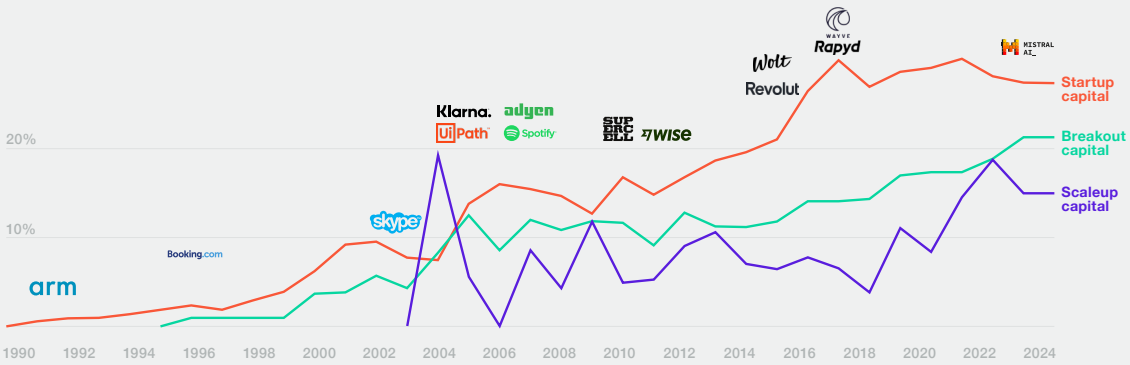


Figure 1. Europe's Venture Capital had a late start
Source: "Accelerating Europe – Part 1 of 3 – The State of European Innovation and Why It Matters", January 2025

tem[3]. This goes beyond figures such as investment deals, unicorns´ creation, or the number of world-renowned digital companies that were born within the European borders. However, the number of investors who would rather invest in American startups, the third of European unicorns that have moved to the US and overall the amount of talent that have sought new opportunities on the other side of the Atlantic in the past few years clearly illustrate this phenomenon.

These indicators can be correlated with the Europeans' relationship to entrepreneurial culture, and how much value is placed on this mindset. It is not solely about keeping an open mind or adopting a certain approach to risk, but rather a profound shift in how we view entrepreneurial culture.

Europe does have a legacy when it comes to incremental innovation that is easily acknowledgeable when considering the numerous instances where solid European industries built their legacy by continuously generating new solutions. However, there has been an innovation shift in the past 20 years. A recent graph published in the Innovation Radar Bridge Consortium Report displays – as shown above - a curve which highlights how the European startup ecosystem began to thrive at a more competitive level right after the 2008 financial crisis. For the first time in the digital age, new European champions emerged such as Revolut, Mistral, Bolt, Wise.

Looking at the timeline, most of the big players – that is, large American corporations - were set up in the past 20 years. They have since become well-established assets, not only for the American economy, but as global tech leaders providing worldwide operability.

[3] Dealroom.co. (2025, February 27). *Accelerating Europe: The state of European innovation and why it matters* [Report]. Dealroom. https://dealroom.co/reports/accelerating-europe

Along comes the necessity to foster entrepreneurship, by enabling Europeans to turn into risk-takers, further develop new ideas and technologies, and most importantly to bolster sovereignty by asserting more authority on our territory through internal governance and external autonomy.

Furthermore, talent competition encapsulates skills, people and market needs, some of Europe's major assets for its growth.

The European startup ecosystem, talent and entrepreneurial culture

Europe's economic and strategic future increasingly relies on entrepreneurial culture. Embracing a more open mindset approach along with high tolerance for uncertainty directly relates to many of the verticals necessary to foster a better and stronger startup and scaleup ecosystem.

An entrepreneurial ecosystem can be defined as a combination of interconnected organisations, institutions and entrepreneurs activating productive business creation. For it to thrive you need a set of interdependent networks that support the system. Among the many stakeholders that are part of these networks, people and human talent are and should be at the centre. In this sense, understanding and leveraging talent becomes a real asset for the startup and scaleup ecosystems to thrive.

As noted in recent EU Reports such as those led by Mario Draghi and Enrico Letta, Europe has abundant talent and ideas but struggles to turn them into global-scale companies. While the roots of this issue stem from more than one factor, having an entrepreneurial culture embedded in society is paramount. To substantiate this point, tech hubs have been highlighting the power of their entrepreneurial communities for decades now. Investor and founder networks, mentors and specific activities demonstrate the importance of connecting stakeholders willing to improve the capacity and growth of their startup ecosystem. A globally relevant reference focusing on the tech ecosystem is the book "Startup communities" by Brad Feld, which was published in 2012, and later became a "blueprint" for what it takes to build a supportive entrepreneurial community. It is now regarded as a classic, the "Boulder Thesis" [4].

The EU Startup and Scaleup Strategy acknowledges Europe's many ideas and great talent, from academia, research centres to early-stage startups - it is presently the region with the most early-stage startups. However, there is still a set of challenges when it comes to turning them into global-scale companies. For example, the Draghi Report (Sept 2024) alerts that "innovation is blocked" by restrictive regulations, causing "many European entrepreneurs [to] prefer to seek financing from US Venture Capital (VC) and scale up in the US market".

Minimising regulations and providing simpler and easier options for European founders to open and scale a company has been mentioned numerous times in the

[4] Feld, B. (2012). *Startup communities: Building an entrepreneurial ecosystem in your city.* Hoboken, NJ: John Wiley & Sons.

past year, from the 28th regime proposal to various pleas to cut red tape in Europe. On the other hand, recommendations also emerged on how to improve investment amounts and processes for European startups. In this sense, ESNA's latest Compendium Volumes on Regulatory Barriers [5] and Investment put forward [6] specific and practical recommendations on both topics. These Volumes aim to provide policy makers concrete solutions and a roadmap on these key issues.

This Volume, while having the same objective, revolves around the much broader topic of entrepreneurial culture, as well as one of the most relevant and repeatedly mentioned topic of the EU Startup and Scaleup Strategy (May 2025)[7]: talent attraction and retention.

A recent publication by the Joint Research Centre (JRC)[8] indicate that nearly 30% of Europe's tech "unicorns" (startups valued >$1bn) have relocated their headquarters abroad in the past few years. Limited opportunities that Europe offers to these companies to raise for the next investment round is one of the reasons. They may also be linked to the greater attractiveness of listing on Nasdaq in the US, which offers higher liquidity, stronger valuations, and a single, integrated market for growth companies - compared to the current fragmentation across multiple European stock exchanges. However, Europe is not usually seen as a top option for these companies. These direct or indirect factors affect talent retention within our borders and talent attraction from beyond Europe.

In this context, European Commission (EC) President von der Leyen and leading policymakers emphasise the need for Europe to shift. Moreover, other European voices took a stand on the matter. Former Vice-President Europe at Breakthrough Energy and former Director-General of the EC Ann Metler pointed that "Europe's inability to scale startups could be disastrous"[9] in a Financial Times Open Column in June 2025, calling for a deep shift in culture. In this Volume's Chapter V, we will thoroughly assess what Europe could do in order to enhance its entrepreneurial culture to eventually support a more competitive startup and scaleup ecosystem.

One of the main reasons this is relevant is that fostering entrepreneurship can become a key factor for Europe's competitiveness and sovereignty, especially amid new geopolitical and technological challenges. The EU's Startup and Scaleup Strategy clearly illustrates this approach by explicitly focussing on attracting and

[5] Rossi, C., Desoche, M., & Macedo Pinto, P. (2025, May). *Building a competitive Europe: The role of startup and scaleup ecosystems — Volume I: Regulatory barriers (red tape).* Europe Startup Nations Alliance. https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.i-regulatory-barriers.pdf

[6] Rossi, C. (Lead author), Desoche, M., & Ribeiro, S. (Project team). (2025, May). *Building a competitive Europe: The role of startup and scaleup ecosystems — Volume II: Investment.* Europe Startup Nations Alliance. https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.ii-investment.pdf

[7] European Commission. (2025, May 29). *EU Startup and Scaleup Strategy: Choose Europe to Start and Scale.* Directorate General for Communication. https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/jobs-and-economy/towards-eu-startup-and-scaleup-strategy_en

[8] "Testa, G., Compano, R., Correia, A., & Rückert, E. (2022). *In search of EU unicorns – What do we know about them?* (JRC Technical Report, EUR 30978 EN, JRC127712). Publications Office of the European Union. https://publications.jrc.ec.europa.eu/repository/bitstream/JRC127712/JRC127712_01.pdf

[9] Metler, A. (2025, June 11). *Europe's inability to scale start-ups could be disastrous. Financial Times.* https://www.ft.com/content/cb86d8aa-03bc-4918-938f-28dbde5d2b5e

retaining the best talent and improving conditions for innovators to "choose Europe" [10] over other markets.

In conclusion, time is pressing: with the world experiencing an AI revolution and many other technological advancements, "Europe cannot afford to remain stuck in the 'middle technologies' of the previous century"[11]. Cultivating an entrepreneurial culture leaning towards skills development now will help Europe seize emerging opportunities rather than fall behind global competitors.

Talent attraction, mobility and brain gain

A thriving entrepreneurial ecosystem needs people – skilled, creative, risk-tolerant individuals – and Europe must compete globally for them. ESNA has explored this topic strongly through one of the Startup Nations Standard (SNS) #2 Talent Attraction and Retention. Despite world-class universities and research institutions, the EU faces labour shortages and brain drain – notably demonstrated by European Centre for the Development of Vocational Training (CEDEFOP)'s Labour and Skills Shortage Index. Local initiatives were set up to mitigate the situation. More on these best practices may be found in Chapter IV of this Volume.

Furthermore, the Draghi Report mentions that Europe produces about 850 STEM graduates[12] per million inhabitants per year - far fewer than the 1,100 in the US - and therefore claims that "the EU's talent pool is depleted by brain drain overseas owing to more and better employment opportunities elsewhere"[13]. To reverse this, EU and national policies aim to improve talent mobility and attractiveness. The EU Blue Card (Directive 2021/1883) already provides a fast-track work permit for highly qualified non-EU workers, enabling them to live and work in Member States under favourable conditions. Building up on these measures, the EC has proposed a "Blue Carpet" initiative to specifically attract global startup founders, and new visa programmes (including an EU-level student/research visa) as part of a Tech Skills Acquisition Programme. As the EIC notes, recent strategies include implementing *"Lab to Unicorn, Blue Carpet, and EU Visa Strategy to attract and retain top talent"*[14].

Yet attracting people is only half the battle; retaining and growing local talent is equally critical. Europe's working-age population is expected to decrease (e.g. from 265 million

[10] European Commission. (2025, July 15). *Choose Europe: advance your research career in the EU.* https://commission.europa.eu/topics/research-and-innovation/choose-europe_en

[11] Soler, P., & Schickler, J. (2024, September 9). *Draghi's report on EU competitiveness: Five key takeaways. Euronews.* https://www.euronews.com/my-europe/2024/09/09/draghis-report-on-eu-competitiveness-five-key-takeaways

[12] Draghi, M. (2024). The future of European competitiveness: A competitiveness strategy for Europe (Part B, p. 81). European Commission. https://commission.europa.eu/document/download/ec1409c1-d4b4-4882-8bdd-3519f86bbb92_en?filename=In-depth%20analysis%20and%20recommendations_0.pdf

[13] Draghi, M. (2024). The future of European competitiveness – Part A: A competitiveness strategy for Europe (p. 8). European Commission. https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en?filename=The%20future%20of%20European%20competitiveness%20_%20A%20competitiveness%20strategy%20for%20Europe.pdf

[14] European Innovation Council & SMEs Executive Agency. (2025, May 28). Commission doubles down on startups with new strategy and EIC expansion. European Commission. Commission doubles down on startups with new strategy and EIC expansion - European Commission

in 2022 to 258 million by 2030)[15], so making Europe a hub for ambitious entrepreneurs matters more than ever. Recent surveys echo this need: an EU Eurobarometer on financial literacy (July 2023) notes that only 18% of Europeans are highly financially literate [16]. Low literacy can discourage entrepreneurship and investment; by contrast, literate individuals tend to make better financing and investment decisions, easing the path to launch and grow a business. Thus, EU efforts such as the Savings and Investment Union (March 2025)[17] pairs financial education with mobilising citizen savings to turn them into productive investments such as startup funding. In short, Europe must become more welcoming to global talent while inspiring its own citizens to think entrepreneurially – offsetting a "fear of agency"[18] and a negative view of failure with the rewards that innovation brings.

New skills for critical industries and technologies

The skills needed in Europe are rapidly evolving as the economy shifts into advanced industries. Critical sectors - which will be further developed in Chapter IV - all require highly specialised talent. Europe already excels in fields such as space and satellite technology (e.g. Airbus or Thales), defence (e.g. Airbus, MBDA, Saab, Leonardo), but must upgrade its workforce to master next-generation technologies[19]. The Draghi Report emphasises this by calling for a "central" focus on providing Europeans with "the skills they need to benefit from new technologies" , so that education and innovation further progress together. The report indeed urges Europe to aim to "exceed the US in providing opportunities for education and adult learning and good jobs for all".

In practice, this implies significant upskilling and reskilling initiatives. The EU is already launching a "European Skills Agenda"[20], and part of the 2025 Startup Strategy calls for a Tech Skills Acquisition Programme to attract and develop talent in areas such as AI and cloud computing. This programme would include an EU-wide visa for students and researchers in STEM fields, extensive scholarships, and

[15] European Commission. (2023, July 6). Commission report finds labour and skills shortages persist and looks at possible ways to tackle them (IP/23/3704). Brussels: European Commission. https://employment-social-affairs.ec.europa.eu/news/commission-report-finds-labour-and-skills-shortages-persist-and-looks-possible-ways-tackle-them-2023-07-06_en?utm_source=chatgpt.com

[16] European Commission. (n.d.). Financial literacy. Directorate General for Financial Stability, Financial Services and Capital Markets Union Financial literacy - European Commission

[17] European Commission. (n.d.). Savings and investments union. Directorate General for Financial Stability, Financial Services and Capital Markets Union. Savings and investments union - European Commission

[18] Note: The fear of agency was a concept acknowledged by ESNA's Advisory Board, similarly to the negative perception of "failure" that is still embedded within the European society. On the opposite, it proves that entrepreneurs innovate and are the leading force for change, not matter the risk and odds.

[19] The future of European competitiveness – Part A, A competitiveness strategy for Europe, Mario Draghi, 20204, page 8 https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en?filename=The%20future%20of%20European%20competitiveness%20_%20A%20competitiveness%20strategy%20for%20Europe.pdf

[20] European Commission. (n.d.). *European skills agenda*. Employment, Social Affairs & Inclusion. Retrieved September 12, 2025, from https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/european-skills-agenda_en

research placements to retain technical skills in Europe. Meanwhile, industry efforts must align on the corporate side: encouraging larger companies to spin off or partner in deep tech ventures can multiply expertise. The EIC's Corporate Partnership report notably emphasises that collaborations between deep tech startups and large corporations help overcome barriers that include long time-to-market and high capital needs, while providing potential clients early access to disruptive innovations[21]. In sum, Europe's strategy is to bind higher education, corporate R&D, and mobility schemes together so that engineers, researchers and managers can continuously reinvent and update their skills in line with the continent's green and digital transformation.

Defining entrepreneurial culture

At its core, an entrepreneurial culture is about mindset, not solely setting up businesses. It "encompasses a set of values, beliefs, and behavioural norms"[22] that encourage initiative, creativity and risk-taking. An entrepreneurial culture is one in which business creation is valued, praised, and supported. Concretely as further developed in the Global Entrepreneurship Monitoring (GEM)[23], this means embracing experimentation and viewing failure as a step toward success. An entrepreneurial culture is simply "an environment where someone is motivated to innovate, create and take risks"[24]. Entrepreneurial culture is not limited to founders, but is also embodied by employees who are then encouraged to brainstorm and pursue new ideas - even during working hours. This broad definition stressed that entrepreneurship is both narrow (creating startups) and broad (acting as the "pilot of your life" rather than a passenger).

It also means developing tolerance for uncertainty and reframing risk: successful entrepreneurs calculate and mitigate risk. As our ESNA AB observed, entrepreneurship is not about risk-taking but risk calculation. It is what you make after you have examined the hazard, thereby diminishing the risk gaps. Cultivating this mindset requires education and a narrative shift. Society should highlight founders as innovators and problem-solvers (even "heroes of high impact"), rather than painting failure as shameful. Encouraging more positive terminology and role models can help. For example, the EU has begun portraying innovative entrepreneurs as driving Europe's future: recent startup strategy documents use terms such as "innovators," "founders," and "change-makers"[25].

[21] European Commission: European Innovation Council and SMEs Executive Agency, Unlocking innovation through corporate-startup collaboration – The EIC Corporate Partnership Programme, 2025 Unlocking innovation through corporate-startup collaboration - Publications Office of the EU

[22] Brownson, C. D. (2013). Fostering entrepreneurial culture: a conceptualization. European Journal of Business and Management, 5(31), 146-155.

[23] GEM (Global Entrepreneurship Monitor). (2025). Global Entrepreneurship Monitor 2024/2025 Global Report: Entrepreneurship Reality Check. London: GEM. ISBN 978-1-0683369-8-0

[24] European Commission. (n.d.). *Entrepreneurial culture* (B5). Erasmus+ Project Results. Retrieved September 12, 2025, from https://ec.europa.eu/programmes/erasmus-plus/project-result-content/02d106a1-ed06-4e42-bfcf-dda5ce79fe93/B5%20-%20Entrepreneurial%20Culture.pdf

[25] Note: to be further developed in Chapter V of this Volume.

Key elements of an entrepreneurial culture

• **Values and norms encourage initiative** Culture is underpinned by shared values, beliefs, and behavioural norms that encourage people to take initiative, be creative, and tolerate risk. Employees feel empowered to propose new ideas and challenge the status quo, knowing that proactive behaviours are valued.

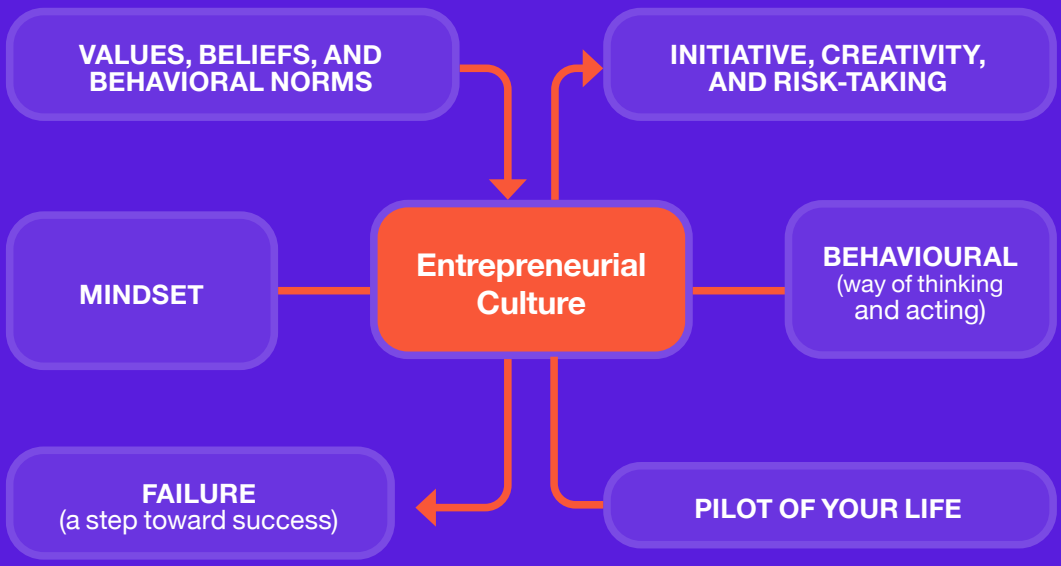
• **Embrace of experimentation and learning** Companies and individuals in an entrepreneurial culture see experimentation as necessary for innovation. New approaches are tried, and failure is not stigmatised, but rather seen as a step toward success rather than a permanent setback. Lessons from failed attempts are used to improve future efforts. This encourages a growth mindset where temporary setbacks fuel learning. As many publications have noted, there is a necessity to push for greater acceptance of failure as part of entrepreneurship.

• **Intrapreneurship and innovation at all levels** Entrepreneurial culture is not a prerogative limited to founders or leadership – it affects all levels of an organisation. Company cultures that apply intrapreneurship – that is, when companies offer dedicated time for employees to brainstorm and develop new ideas - they reward initiative from anyone, regardless of job title, eventually leading to a steady stream of innovation from within.

• **Broad applicability - "startup" and life mindset** While "entrepreneurship" often refers to creating new businesses (startups), an entrepreneurial culture has a broader application. It goes along with the mindset of being proactive and opportunity-seeking in any context. People with this mindset take ownership of their projects and careers, adapt quickly to change, and actively seek out solutions and new opportunities rather than waiting passively. This cultural trait can thus benefit not only business creation but personal growth and employability as well, as individuals learn to navigate their lives with initiative and resilience.

• **Supportive societal narratives, legitimacy, and ecosystem infrastructure**

A thriving entrepreneurial culture is reinforced by the broader societal environment in which entrepreneurship is practiced. Media narratives that go beyond "unicorn" hype and instead normalise diverse entrepreneurial journeys - including failures - help reduce stigma and inspire realistic role models. Social legitimacy plays a key role: when entrepreneurship is seen as a respected career path, it attracts a broader, more diverse range of participants. Trust in institutions, consistent policy support, and recognition through public procurement or incentives (beyond awards) also enhance the cultural status of entrepreneurship. Strengthening peer networks, local startup communities, and support infrastructure fosters a collective identity and reduces isolation, especially for prospective, new or underrepresented entrepreneurs. These enablers are key to build a culture where entrepreneurship is respected, supported, and celebrated.



Necessity VS opportunity-driven entrepreneurship

While entrepreneurial activity among underrepresented or vulnerable groups has grown in several European countries, much of this increase remains necessity-driven rather than opportunity-driven. Many individuals from underrepresented groups start businesses out of economic need or limited employment alternatives, rather than from a position of choice, innovation, or opportunity recognition.

Europe must therefore focus on enabling opportunity-driven entrepreneurship among these groups. As GEM's data shows, the growing participation of women in general entrepreneurship, the above-average activity of migrant founders in countries like Germany[26], and the rise of "silverpreneurs" (aged 55+) in Austria[27] and beyond, together reveal a promising foundation. However, targeted policies and support mechanisms are still needed to ensure these dynamics evolve from necessity-based reactions to genuine opportunity-led ventures — empowering more people to innovate, create value, and actively contribute to Europe's competitiveness.

While overall entrepreneurial activity shows a gradual improvement in gender balance, this progress is not yet reflected in deep tech sectors, where women remain significantly underrepresented. Additionally, certain age groups are of particular interest when considering their experience, life stages and motivation to dive into entrepreneurship. These groups are the focus of the following table, which highlight their particularities and the role they can play in the startup ecosystem.

Entrepreneurial culture includes not only entrepreneurs but investors, universities, corporates and policymakers. Strengthening the ecosystem entails connecting these stakeholders, but also providing early-stage funding, simplifying regulations, and ensuring intra-EU mobility. If Europe's four decades of Single Market have cemented the free movement of goods, a parallel free flow of start-ups and talent should follow along. As Letta's Single Market report notes[28], each of the EU's projects and missions needs a supportive culture of innovation to succeed. Without it, innovative companies will continue to "see the Single Market as an obstacle rather than an opportunity".

[26] Sternberg, R., Täube, F., Wallisch, M., Schauer, J., Gorynia Pfeffer, N., Baharian, A. et al. (2023). GEM Germany: Entrepreneurship Rates Rise to Record Highs (GEM Germany National Report findings). Hannover: Leibniz Universität Hannover / GEM Consortium. Retrieved from https://www.gemconsortium.org/news/entrepreneurship-rates-rise-to-record-highs-in-germany

[27] Kraus, S., Meier, F., Niemand, T. (2025). GEM Austria: 2024/25 National Report (Full Version). Vienna: Global Entrepreneurship Monitor Austria / GEM Consortium. Retrieved from https://www2.gemconsortium.org/report/gem-20242025-austria-national-report-full-version

[28] Letta, E. (2024, April 17). *Much more than a market: Speed, security, solidarity. Empowering the Single Market to deliver a sustainable future and prosperity for all EU citizens* [Report]. European Council / European Commission.

Under-represented group	Description & entrepreneurial potential	Importance for European competitiveness & startup ecosystem	Key Gaps/Barriers/ Needs	Policy Suggestions (actionable)	Existing Policy/ Programme Example
Mothers (with young children)	Women with young children can be highly skilled but constrained by caregiving duties. They seek flexible work options and represent an untapped entrepreneurial talent pool, as family responsibilities strongly influence women's business activity.	Engaging more mothers in entrepreneurship will help close the gender gap, unlocking innovation and talent. Women (including mothers) make up ~73% of the EU's "missing" entrepreneurs. The persistent gender gap in entrepreneurship costs Europe ideas, innovation and jobs, so supporting mothers' startups is key for competitiveness and growth.	Caregiving burdens and lack of affordable childcare are primary barriers. Mothers returning from career breaks often face outdated skills and low confidence. They also have fewer entrepreneur role models.	1. Provide childcare support for entrepreneur parents (e.g. subsidised childcare, incubators with daycare) to reduce work–family conflicts. 2. Offer targeted upskilling, training and mentoring programmes for mothers re-entering the workforce to build business skills and confidence. 3. Launch networking and role-model initiatives (e.g. "mompreneur" ambassador campaigns, peer networks) to inspire and support mothers in entrepreneurship.	MothersCan (Erasmus+ 2024 project) – provides free entrepreneurship training, mentorship and flexible learning for mothers (especially those long-term out of work) to help them rebuild s kills and launch businesses.
Seniors (55+ years)	People age 55 and above, often with extensive work experience, skills and networks. They have substantial entrepreneurial potential. Many seniors are self-employed already, though far fewer actively launch new businesses (over-55s are ~60% as likely as the general population to be involved in a startup). Senior-founded ventures can leverage their lifetime of expertise and support "active ageing" by valorising older workers' experience.	As Europe's population ages, senior entrepreneurship helps extend working lives and reduce pension and labour-force pressures. Unlocking this group could yield millions of new businesses. Supporting more older founders taps a huge reservoir of talent and experience for innovation and job creation, while also fostering social inclusion and active ageing.	Key obstacles include high opportunity costs (many are reluctant to risk retirement savings or time) and outdated professional networks. Additionally, dedicated support for older entrepreneurs is relatively scarce compared to other groups, so seniors may struggle to find tailored training, financing and mentoring.	1. Develop senior-friendly training and coaching (e.g. digital skills workshops, peer coaching) and train business advisors to better assist older founders (e.g. use "silver entrepreneurship" sensitivity training to avoid jargon or age bias). 2. Increase outreach and recognition - run campaigns, fairs and award programmes showcasing successful senior entrepreneurs to normalise late-career entrepreneurship and inspire others. 3. Offer targeted financial incentives (e.g. partial pension retention, startup grants or tax breaks for 50+ entrepreneurs) and facilitate business succession schemes to help seniors start or transfer businesses smoothly.	Several EU countries have introduced policies for senior entrepreneurs, ranging from national strategies emphasising entrepreneurship in active ageing policies to senior entrepreneur awards/festivals to celebrate and promote older founders.
Mid-career professionals (40-range)	Professionals in mid-career, typically with 10–25 years of work experience and strong industry knowledge. This cohort shows high entrepreneurial capability. Engagement in new startups and confidence in entrepreneurship peak during mid-career ages. These individuals are well-placed to launch innovative ventures, translating corporate or technical expertise into new businesses and scaling them with their management experience.	Mobilising mid-career founders can drive innovation and high-growth startups. Many successful entrepreneurs are in this age range, benefitting from experience and networks. Given that entrepreneurial activity is robust in the 35–50 bracket, policies targeting it can boost Europe's competitiveness by converting more seasoned professionals into entrepreneurs rather than leaving potential innovations untapped in corporate roles. This helps retain talent and know-how in the European startup ecosystem, fueling innovation and productivity.	Mid-career candidates may face "golden handcuffs" of secure jobs – the financial and career opportunity cost of leaving a stable position is high. Responsibilities like mortgages and children can make risk-taking harder, and there are few tailored initiatives for this group. Limited time/flexibility to develop a venture while employed and fear of losing savings or status are additional deterrents. In short, mid-career professionals need support to bridge the transition from corporate careers to entrepreneurship.	1. Introduce mechanisms for career flexibility: e.g. sabbatical or "entrepreneurship leave" schemes allowing mid-career employees to try launching a business with the option to return to their job. 2. Provide financial support and risk-sharing for mid-career entrepreneurs. This could include innovation grants, startup loan guarantees, and programmes that enable use of unemployment benefits or stipends while developing a business – thereby reducing the financial risk of leaving salaried employment. 3. Expand mentorship and networking tailored to experienced professionals. For instance, facilitate programmes that match mid-career aspiring founders with seasoned entrepreneurs or incubators. Such networks help mid-career individuals acquire startup know-how and contacts.	The EU's Erasmus for Young Entrepreneurs programme (not age-restricted) provides mid-career first-time founders an opportunity to learn from experienced business owners in another country, building their entrepreneurial skills.

Table 1. Groups of entrepreneurs with untapped potential.

Source: OECD/European Commission. (2023). The Missing Entrepreneurs 2023: Policies for Inclusive Entrepreneurship and Self-Employment. OECD Publishing. https://doi.org/10.1787/230efc78-en

The European startup ecosystem: growth and gaps

Europe's startup ecosystem has grown considerably over the past 20 years [29], but still lags behind the US and Asia in scale. According to Dealroom's data, European startups raised roughly $63 billion in 2023 across 10,000+ funding rounds, an all-time high (albeit down from 2022's boom) [30]. Importantly, Europe's share of global venture capital has also doubled in five years: reaching a record 19 to 20% in 2023. This shows progress: Europe now agglomerates nearly one-fifth of the world's startup funding, up from only 5% two decades ago.

Nevertheless, these gains mask lingering gaps. Only 8% of global scaleups are now based in the EU (versus 60% in North America), and while European startups still far outnumber their US peers in early-stage rounds, they fall behind in later rounds and IPOs [31].

Many ambitious founders and skilled workers still gravitate towards the Silicon Valley's ecosystem. On the other hand, Europe's deep tech scene is vibrant; Dealroom notes that "manufacturing" and "frontier tech" startups are attracting sizable funding. To truly get closer to the US' pace however, the continent needs a more cohesive identity and network - what some analysts call a unified European "flywheel"[32] of innovation or flywheel effect[33]. For instance, Klarna (a fintech unicorn) has spun out 62 startups via its alumni, and older success stories such as Skype (2003) seeded new champions that include Bolt, Wise and Pipedrive[34]. These examples display potential: by supporting such "founder factories" across all Member States and sectors, Europe can create a self-reinforcing ecosystem.

Risk mindset approach under the investor's perspective

Along with this global comparison, as mentioned in ESNA's Compendium, Europe has all the conditions to set up a strong startup ecosystem that can regain its power as a hub of innovation, akin to what happened during the 1960s and 1970s with the industrial boom.

"Europeans company leaders have spent their first 10 to 20 professional years focusing on meticulously chosen projects to be profitable in Europe, therefore limiting risk-taking. Consequently, by the time they ascent to leadership positions, they have

[29] Rossi, C. & Jordao, A. (2024). *EU startup ecosystem: Driving change, past, present and future – How and why we should all act together.* Europe Startup Nations Alliance (ESNA). Retrieved September 12, 2025, from https://backoffice.esnalliance.eu/multimedia/esna/esna-compendium-1.pdf

[30] Dealroom. (2023). Europe Tech Report 2023. The European Deep Tech Report 2023 | Dealroom.co

[31] European Commission. (2025, May). *EU startup and scaleup strategy*. Research and Innovation. Retrieved September 12, 2025, from https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/jobs-and-economy/eu-startup-and-scaleup-strategy_en

[32] Bhalla, V. (2023, June 21). *Can Europe's deep tech flywheel rival the U.S. for startup exits? Experts say yes, here's how.* Tech Funding News. Retrieved September 12, 2025 https://techfundingnews.com/can-europes-deep-tech-flywheel-rival-the-u-s-for-startup-exits-experts-say-yes-heres-how/

[33] Note: The flywheel concept was used during ESNA Advisory Board process, as to elaborate a better understanding of the needs in Europe. See Chapter III.

[34] Source: O'Hear, S. (2023, June 7). *Klarna: The founder factory*. Sifted. Retrieved September 12, 2025, from https://sifted.eu/articles/klarna-founder-factory

ingrained a "culture" of extreme caution towards risk-taking"[35].

Europe has 40% more software developers than the US, which is a fundamental factor in having more startups with cutting-edge technology originating from Europe. At the same time, it is also well-known that Europe is already a hub for early-stage startups; Europe created more startups from 2014 to 2023 compared to the US (35,000 early-stage startups over this period[36]), despite the differences in the amount of cash-flow available, regulation constraints, as well as the varying participation of corporate or big companies in the process of investing in new ventures.

One of the ways risks can also be measured is regarding the amount of money that is available for what are considered "riskiest" investments. In this case, a good example showcasing the current situation in terms of savings in Europe can be found in the following image:

[35] Coste, O. (2023). *Europe, Tech and War*.

[36] Dealroom. (2025). *Accelerating Europe – Part 1 of 3: The State of European Innovation and Why It Matters.* https://dealroom.co/uploaded/2025/02/Accelerating-Europe-Dealroom.pdf

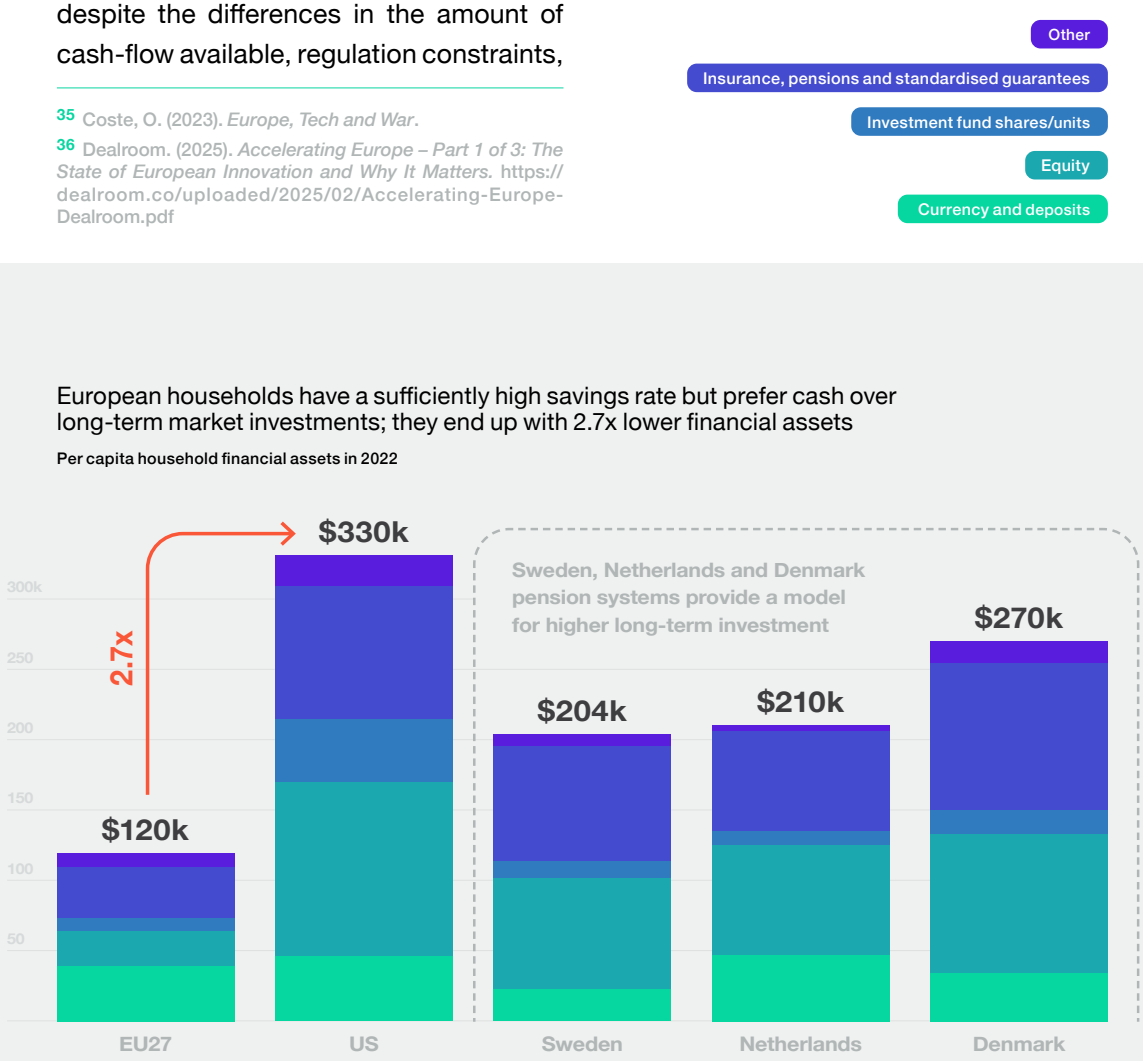


Figure 2. European households have a sufficiently high savings rate but prefer cash over long-term market investments; they end up with 2.7x lower financial assets.

Source: "Accelerating Europe – Part 1 of 3 – The State of European Innovation and Why It Matters", January 2025.

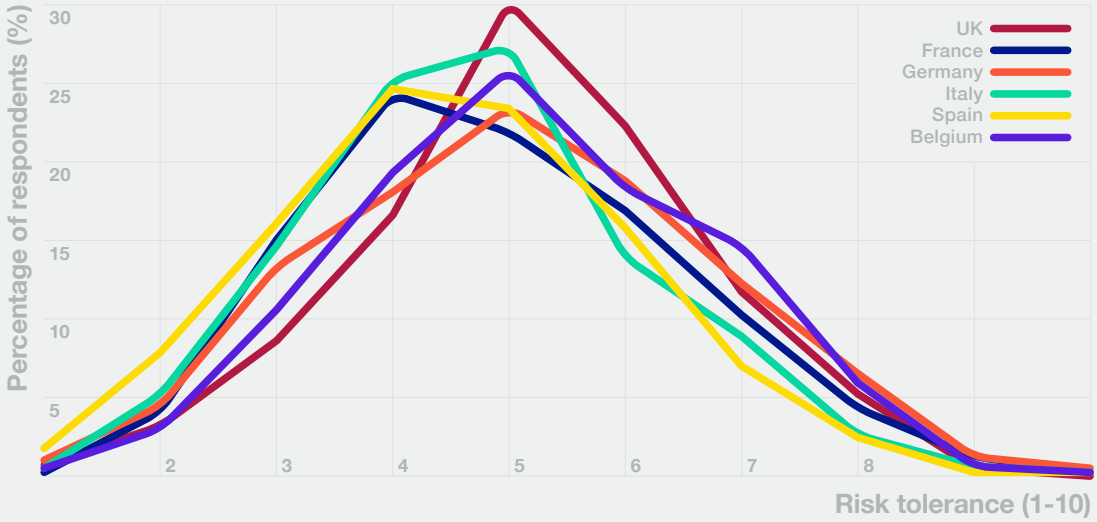


Figure 3. Cross-country comparison of the distribution of attitude to risk scores
Source: 2023 The Authors. International Journal of Finance & Economics published by John Wiley & Sons Ltd.

In conclusion, Europe provides an excellent foundation for innovators: a robust framework for public grants, a large pool of talented startups, and decades of industrial pre-eminence, to name a few. However, it is the allocation of funding and the overall mindset that make it more difficult to take the next step. While reaching a paradigm shift in terms of risk will take some time, Europe can act concretely when it comes to fostering private investment - this will be more broadly detailed in the rest of the Volume.

The following section will be focusing on the Capital Market Union, which notably intends to provide a framework that unlocks access to capital for businesses. This implies opening up to risk capital and therefore igniting a cultural shift as mentioned in this chapter. We will be exploring how market fragmentation is impacting the current European investment ecosystem, and what has been implemented to mitigate it.

Education, universities and youth

Embedding entrepreneurship early is essential. Through its Startup and Scaleup Strategy, the EU now regards entrepreneurship as a key competence in education, along with financial literacy and numeracy. School and university programmes across Europe are increasingly incorporating innovation, startup projects, and business skills into curricula. For instance, the Erasmus+ programme funds strategic partnerships and training for entrepreneurship education, and tools such

as HEInnovate[37] help universities build entrepreneurial learning environments. Universities themselves found startup incubators and accelerators, and spin out research into companies.

European universities generate exceptional research and talent among which Nobel laureates, nonetheless they must also train students to be job creators, not just job seekers. Member States offer growing support and public funding to foster student entrepreneurship and build a bridge between academia and industry. For example, the European Institute of Innovation and Technology (EIT) and national startup initiatives work with universities to align curricula to industrial needs (digital, green technologies) – this is further detailed in Chapter IV. This complements lifelong learning: Draghi advocates major adult education and vocational reform so workers can update skills in tech fields.

Financial literacy and entrepreneurial success

In order to keep up with increasing innovation, Europe needs a population that is financially literate so that it is able to navigate an evolving economic landscape. In this sense, financial literacy plays a significant role that could become even more relevant for the startup and scaleup ecosystem over time.

HEInnovate

Launched in 2013 by the EC in partnership with the OECD, HEInnovate offers support to Higher Education Institutions (HEI) willing to assess their innovative potential. It revolves around 8 key areas:

- Leadership and governance
- Organisational capacity: people, resources, incentives and rewards
- Entrepreneurial teaching and learning
- Preparing and supporting entrepreneurs
- Digital transformation and capability
- Entrepreneurial ecosystem and networks
- The internationalised institution
- Impact of the entrepreneurial HEI

This tool - available in all EU languages - analyses the institution's strengths and weaknesses. It provides a number of resources to support HEIs in their paths towards a more innovation-friendly environment, ranging from learning materials to experts on specific topics. In the past 12 years, over 34K self-assessments were carried out and a number of workshops and events took place.

[37] European Commission & OECD. (n.d.). *HEInnovate: Supporting innovation in higher education*. Retrieved from https://heinnovate.eu/en

The Savings and Investment Union (SIU) aim to establish a more supportive and enabling environment for citizens that may wish to invest in financial markets, allowing them to get better access to productive investment opportunities [38].

On March 19th of 2025, the new SIU was launched by the EC - one of its pillars being the need for financial literacy. As per the need of injecting more cash flow in Europe, to "channel savings into productive investments", this EU proposal seeks to increase EU citizens' participation in capital markets with broader investment options and improved financial literacy, thereby fostering their wealth and boosting the EU's economy. Considering that around 70% of households savings in the EU - worth €10 trillion - are stored as bank deposits. While this investment may be safer, it does not support the capital market. This new strategy intends to support EU citizens to, as indicated in the official document, "[save] better for the future".

*Thanks to the savings and investments union, **citizens who wish to invest** will have better opportunities to invest in capital markets. This means having **easy, simple and low-cost access** to a wide variety of investment opportunities* [39].

As the EU channels unprecedented funds into sustainability and innovation through initiatives such as NextGenerationEU, citizens and entrepreneurs must also understand how to access, allocate, and benefit from these resources. Financial literacy, therefore, becomes not just a personal tool but a societal enabler - ensuring that individuals can participate meaningfully in the opportunities offered by the green and digital transformation, make responsible investment choices, and contribute to a more resilient, inclusive, and competitive European economy.

*The Commission will develop a **European blueprint for savings and investments** accounts or products for retail investors based on existing national best practices, including recommendations to Member States on the tax treatment for such investment accounts. Such savings or investments accounts, combined with adequate tax treatment, can widen the pool of funding available for EU companies and help to meet EU investment needs in the green and digital transitions, as well as in defence* [40].

> *"Financial literacy for entrepreneurs is the combination of awareness, knowledge, skills, attitudes, and behaviour that a potential entrepreneur or an owner or manager of a micro, small or medium-sized enterprise should have to make effective financial decisions to start a business, run a business,*

[38] European Commission. (2025, March 19). *Savings and investments union: Better financial opportunities for EU citizens and businesses* [Press release]. European Commission. Savings and investments union: better financial opportunities for EU citizens and businesses - European Commission.

[39] Idem.

[40] European Commission. (2025, January 24). *Questions and answers: A competitiveness strategy for Europe – report by Mario Draghi* [Press release]. European Commission. Retrieved September 12, 2025, from https://ec.europa.eu/commission/presscorner/detail/en/qanda_25_803

and ultimately ensure its sustainability and growth"
(OECD, 2018)[41].

The EC published in July 2023 the results of a Eurobarometer survey on financial literacy in the EU. The survey tested both the financial knowledge and financial behaviour (jointly considered as financial literacy) of EU citizens. The results show that only 18% of EU citizens have a high level of financial literacy, 64% - a medium level, and the remaining 18% - a low level. There are, however, wide differences across Member States. In only four Member States, more than 25% of people score highly in financial literacy (the Netherlands, Sweden, Denmark and Slovenia).

[41] Hammer, Thomas & Siegfried, Patrick. (2023). Implications of Financial Literacy on Entrepreneurship. Audit Financiar. 21. 194-208. 10.20869/AUDITF/2023/169/007.

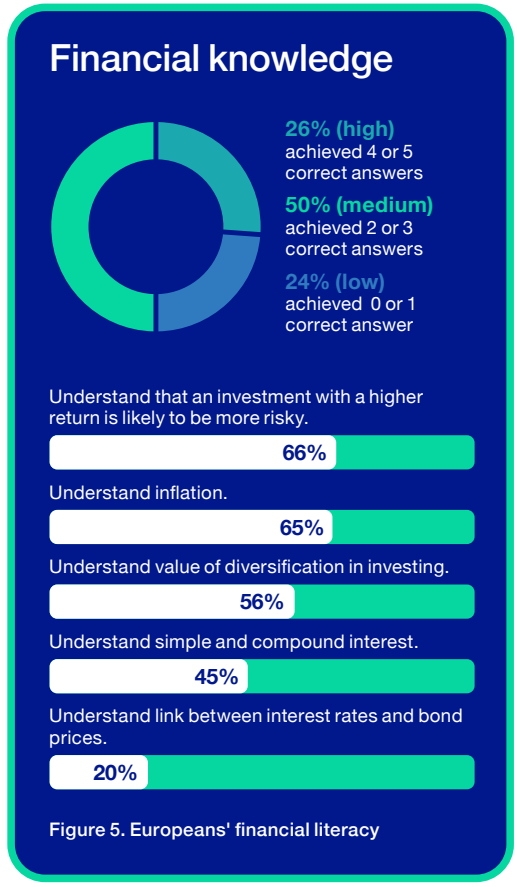


Figure 5. Europeans' financial literacy

Key Findings

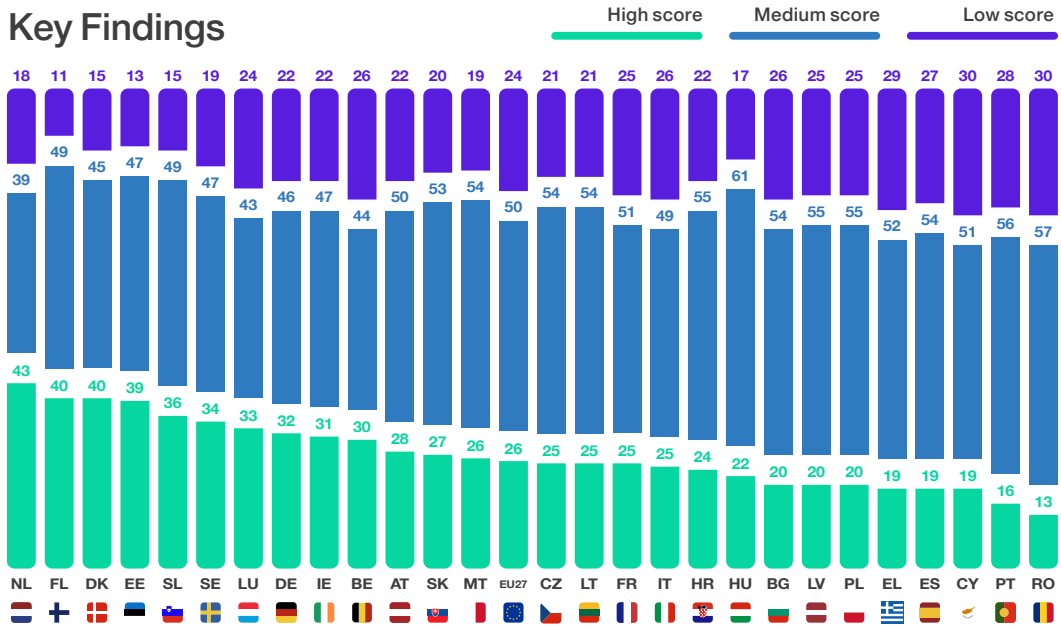


Figure 4. European's financial literacy levels

Embracing risk and cultural change

Shifting Europe's narrative around risk and failure is essential for a vibrant startup culture. Currently, many Europeans view entrepreneurial failure as stigma rather than learning. Overcoming this negative view of failure requires reframing how we talk about startups. Using positive terms such as "high impact," "self-realisation," or even calling entrepreneurs "European heroes" of innovation may help alter public perception. This cultural reset goes together with risk management skills: entrepreneurs must learn to thrive with uncertainty, there-

Figure 6. *Key differences between weak and strong uncertainty-avoidance societies*

Source: https://archive.org/details/g.-hofstede-g.-j.-hofstede-m.-minkov-cultures-and-organizations-software-of-the-/page/223/mode/2up?view=theater Cultures and Organizations: Software of the Mind by Geert Hofstede & Gert Jan Hofstede

Weak Uncertainty Avoidance	Strong Uncertainty Avoidance
Few and general laws or unwritten rules	Many and precise laws or unwritten rules
If laws cannot be respected, they should be changed	Laws are necessary, even if they cannot be respected
Fast result in case of appeal to justice	Slow result in case of appeal to justice
Citizens are competent toward authorities	Citizens are incompetent toward authorities
Citizen protest is acceptable	Citizen protest should be repressed
Civil servants do not have law degrees	Civil servants have law degrees
Civil servants are positive toward the political process	Civil servants are negative toward the political process
Citizens are interested in politics	Citizens are not interested in politics
Citizens trust politicians, civil servants, and the legal system	Citizens are negative toward politicians, civil servants, and the legal system
There is high participation in voluntary associations and movements	There is low participation in voluntary associations and movements
The burden of proof for identifying a citizen is on the authorities	Citizens should be able to identity themselves at al times
Outside observers perceive less corruption	Outside observers perceive more corruption
Liberalism	Conservatism, law and order
Positive attitudes toward young people	Negative attitudes toward young people
Tolerance, even of extreme ideas	Extremism and repression of extremism

by developing tolerance for ambiguity.

Celebrating experimentation is crucial to this shift. Startups, by definition, test new ideas – with no guarantee of success. Europe must acknowledge that each "failure" is actually data for iteration. By promoting this understanding, schools, media and policymakers can reduce the fear of agency and encourage more people to pilot their own ventures. Success stories of resilient founders (European or global) should be widely showcased. In short, a strong entrepreneurial culture requires patience and a long-term mindset: it prepares society to handle rapid innovation cycles rather than retreat from them.

Dealing with risk and managing uncertainty go hand in hand together. The Hofstede model[42] is a foundational concept to assess cultures and their specificities, and is often applied in business environment. One of the points assessed through this method is uncertainty avoidance. Hofstede and his team created a framework to assess countries' relationships to uncertainty, and therefore to risk. Its main features can be found in the table below.

Each country's relationship to risk is assessed with a score ranking from 0 (indicating a certain tolerance for ambiguity) to 120 (for societies that lean towards structure). As seen below, most European countries tend to score higher, with only Denmark, Finland, Ireland, the Netherlands, Slovakia and Sweden scoring below 60. This suggests that Nordic countries tend to be more flexible, as their scores are closer to a country like the US – whose score is 46.

Figure 7. *Countries' relationship to risk.*
Source: geerthofstede.com

Country	Uncertainty Avoidance
Austria	70
Belgium	94
Bulgaria	85
Croatia	80
Cyprus	90 (est.)
Czechia	74
Denmark	23
Estonia	60
Finland	59
France	86
Germany	65
Greece	100
Hungary	82
Ireland	35
Italy	75
Latvia	63
Lithuania	65
Luxembourg	70
Malta	96
Netherlands	53
Poland	93
Portugal	100
Romania	90
Slovakia	51
Slovenia	88
Spain	86
Sweden	29

[42] Cultures and Organizations: Software of the Mind by Geert Hofstede & Gert Jan Hofstede

According to a 2021 Delphi study[43], one of the most transformative trends expected by 2030 is the rise of "everyday–everyone entrepreneurship". This concept indicates a shift in which entrepreneurial behaviour becomes a general life principle rather than a practice limited to founders or startups. It suggests that entrepreneurial thinking will increasingly influence all layers of society, from education and employment to civic engagement, as individuals and institutions learn to identify challenges and turn them into opportunities for value creation.

If Europe accelerates this trend, the impact could extend far beyond economic outcomes. Embedding entrepreneurial mindsets into education, work, and governance would help reshape cultural norms and attitudes toward entrepreneurship, by turning it into a shared societal competence.

Linking entrepreneurial culture with talent policy: a strategic imperative for Europe

To ensure a competitive, innovative, and sovereign Europe, fostering a strong entrepreneurial culture must be aligned with tangible policy measures on talent development, reskilling, and attraction. The EU Startup and Scaleup Strategy identifies these areas as essential enablers to accelerate Europe's transition into a global innovation powerhouse.

1. Reskilling and upskilling: building the mindsets of the future

- **Building new opportunities for specific target groups** allows Europe to tap into underutilised human capital, reducing socio-economic divides and promoting inclusive innovation.
- **Assessing which skills are needed in Europe today** is foundational to align education and training ecosystems with the demands of the 11 critical industrial sectors – further developed in Chapter III. This requires dynamic, real-time skills intelligence and collaboration with industry and ecosystem actors.
- **Setting up a framework for a freelancer economy** fosters agility and independence, core traits of an entrepreneurial mindset. Supporting non-traditional work models enables individuals to operate with autonomy while contributing to economic dynamism, especially in tech sectors.

These actions are not only workforce-targeted measures but cultural interventions: they help normalise experimentation, adaptability, and self-initiative—central pillars of entrepreneurial culture.

[43] Van Gelderen, M., Wiklund, J., & McMullen, J. S. (2021). Entrepreneurship in the future: A Delphi study of ETP and JBV editorial board members. Entrepreneurship Theory and Practice, 45(5), 1098–1125. https://journals.sagepub.com/doi/10.1177/10422587211010503

2. Talent attraction: positioning Europe as a magnet for global innovators

- **Integration and talent attraction for EU candidate countries** offers a dual benefit: reinforcing geopolitical cohesion and expanding the innovation talent pool.
- **Building an attractive career vision for graduates across Europe** fosters a sense of purpose and long-term opportunity within the European innovation space, which is critical to counter brain drain and reinforce loyalty to EU-based ventures.
- **Accelerating intra-EU mobility** ensures that talent can circulate across borders, accessing ecosystems where they can thrive - be it Paris, Lisbon, Vilnius or Ljubljana. This also enhances cross-cultural and cross-sectoral innovation.
- **Facilitating access to grants** directly supports entrepreneurial experimentation by removing financial friction, particularly for first-time founders or those in regions with limited VC availability.

3. Entrepreneurial culture as the connecting thread

What links all these measures is the broader concept of entrepreneurial culture, understood not merely as promoting more startups, but as cultivating a Europe of proactive individuals. Individuals who:

- View uncertainty as a space for creation, not fear.
- Are equipped with the skills to adapt, learn, and lead.
- See themselves as contributors to Europe's innovation sovereignty, not as spectators.

Policy actions on reskilling and talent attraction are therefore vehicles for building this mindset. Education, mobility, inclusion, and support mechanisms shape not only a person's ability to work—but their belief in their own agency and capacity to shape the future.

Cross-border employment: A

ESOPs, cross-border taxes & social security (fair labour mobility package), Skills Portability Initiative

Attracting talents: B

EU Visa Strategy, students and researchers directive, EU Blue Card Directive, Multipurpose Legal Gateway Offices, Euraxess

Entrepreneurial culture: C

Entrepreneurial education & upskilling

Main takeaways:

1. Europe's strengths vs. scale paradox

World-class science, universities, green/health/manufacturing advantages, and leading regulation (GDPR/AI Act) contrast with persistent scale gaps and unicorn relocations.

2. The 30-year gap & late VC start

Europe's startup flywheel kicked in post-2008; it still trails the US on late-stage capital, IPOs, and global tech champions despite progress at early stages.

3. Entrepreneurial culture as a strategic lever

Mindset - not just money - matters shift from risk-avoidance to calculated risk and from "permission-seeking" to agency across society, firms, and policy.

4. Talent at the centre

Attraction, retention, and mobility are decisive: fix brain drain, ease intra-EU movement, and make Europe the obvious choice for ambitious founders and builders.

5. Skills for critical industries

A continental push on reskilling/upskilling aligned to the 11 strategic sectors (AI, cloud, defence, space, green tech, etc.) to match technological shifts with workforce capability.

6. Regulatory simplicity to unblock scaling

Cut red tape, enable one-stop "28th regime" style options, and harmonise cross-border operations so startups experience a true Single Market.

7. Capital formation & citizen participation

Turn high household savings into productive risk capital (Capital Markets Union (CMU) + SIU), and raise financial literacy so citizens confidently invest and fuel innovation.

8. Ecosystem flywheels & founder factories

Strengthen dense networks (founders, investors, corporates, universities, mentors) to create repeat founders, alumni effects, and self-reinforcing regional flywheels.

9. Universities & youth as engines

Embed entrepreneurship early (schools, HEI tools like HEInnovate), accelerate spin-outs, and reward intrapreneurship so graduates become job creators, not only job seekers.

10. Narrative reset on failure & risk

Normalise experimentation, reframe failure as learning, and celebrate "European heroes of innovation" to raise societal tolerance for uncertainty.

11. Sovereignty through innovation

A stronger startup/scaleup base underpins Europe's economic security and geopolitical autonomy—sovereign computation, sovereign capital, sovereign skills.

12. Actionable policy bridge (ESNA lens)

Converge culture with policy: targeted reskilling, freelancer-economy frameworks, Blue Card/"Blue Carpet" talent channels, grants access, and mobility boosts—paired with ESNA's Investment & Red-Tape recommendations and concrete KPIs.

II. Mapping Europe: EU policy and guidelines on talent and entrepreneurial culture

Key Themes

- Policy and legal foundations – TFEU Articles 145–160 provide the EU mandate to promote a skilled, adaptable workforce and coordinated employment strategies.
- Strategic EU funding – ESF+ (€142.7B), Erasmus+, and RRF (€42B for human capital) are the main policy instruments supporting reskilling, mobility, and entrepreneurial culture.
- Recovery and resilience – The RRF and National Recovery Plans embed talent policies into post-COVID recovery, linking digital and green skills with employment reforms.
- Competitiveness and sovereignty – Human capital is recognised as a strategic resource, with policies emphasising skills for frontier tech and entrepreneurial culture as drivers of EU autonomy.
- Draghi & Letta policy priorities – Structural reforms are needed in adult learning, labour mobility, education performance, and diaspora return, alongside proposals for EU-recognised certifications and digital cross-border work regimes.
- EU guidelines and missions – Ursula von der Leyen's Political Guidelines and Commissioners' Mission Letters prioritise the Union of Skills, STEM/VET strategies, diploma recognition, and mobility packages.
- Competitiveness Compass & future instruments – FP10 and the proposed ECF consolidate fragmented funding, target critical industries, and link talent policies with EU-wide strategic autonomy.

In recent years – particularly in the aftermath of the COVID-19 pandemic – the European Union (EU) has increasingly recognised the central role that talent and entrepreneurial culture play in driving innovation, productivity, and long-term competitiveness. The transition to a digital and green economy has underscored the urgency to invest in human capital, as the global economic landscape is increasingly shaped by breakthroughs in AI, quantum computing, robotics, and data engineering. As many of the world's leading companies are now digital-first, the capacity of Europe to develop, retain, and attract the right skills has become a defining factor for the continent's strategic autonomy.

The EU has made clear that it cannot re-

main dependent on foreign technological infrastructure for its most critical sectors, such as health, defence, energy, and cybersecurity[44]. As highlighted by EU leaders and institutions, the development of a digitally skilled, entrepreneurial, and resilient workforce is indispensable to ensuring that Europe can build and manage the infrastructure that underpins its sovereignty and innovation capacity.

Policy and legal foundations for talent investment

At the legal and institutional level, the EU Treaties (specifically Articles 145–160 of the Treaty on the Functioning of the European Union, TFEU) provide a strong basis for coordinated action on employment and skills. These articles commit both the Union and Member States to:

> *"...[develop] a coordinated strategy for employment and particularly for promoting a skilled, trained and adaptable workforce and labour markets responsive to economic change, with a view to achieving the objectives defined in Article 3 of the Treaty on European Union."*

In line with this framework, the EU has deployed several funding mechanisms and policy initiatives designed to close skill gaps, foster inclusion, and build a more cohesive and innovative workforce across the Union.

Strategic investment in talent development

Under the Multiannual Financial Framework (MFF) 2021–2027, the EU has allocated over €64 billion specifically for talent-related programmes. The two main instruments within this envelope are:

- The European Social Fund Plus (ESF+), the EU's primary vehicle for investing in people, with a budget of €142.7 billion across its scope. ESF+ supports employment opportunities, skills training, and social inclusion, and plays a critical role in upskilling and reskilling the workforce to meet the demands of the green and digital transitions.
- Erasmus+, a flagship EU programme and one of the most popular ones, promotes mobility, cross-border learning, and the development of transversal and entrepreneurial skills among youth, students, and professionals. By fostering a shared European identity and expanding access to global networks, Erasmus+ contributes significantly to the development of a generation ready to scale ideas and startups across borders.

Both of those serve as exemplary practices for supporting not just talent development, but also entrepreneurial culture[45]. Beyond skilling, these programmes encourage a mindset of collaboration, mobility, and ambition - supporting young Europeans not just to launch businesses in their home

[44] Note: Further details on critical Industries may be found in Chapter III.

[45] Note: Eramus+ was strongly highlighted by ESNA Advisory Board.

countries, but to *think European* from the start.

Recovery and resilience for a competitive Europe

The Recovery and Resilience Facility (RRF) provided an additional €42 billion targeted at human capital development in the context of post-pandemic recovery. As the central pillar of the NextGenerationEU instrument, the RRF was designed to simultaneously address short-term disruptions and enable long-term transformation. National Recovery and Resilience Plans (RRPs) have earmarked substantial resources for:

- Digital and green skills training
- Education and school reforms
- Employment support for women, youth, and vulnerable workers
- Entrepreneurial and innovation capacity building

By prioritising investments in talent, the RRF ensures that the EU can recover inclusively and emerge more resilient.
"As we overcome the pandemic, as we prepare necessary reforms and as we speed up the twin green and digital transitions, I believe it is time to also adapt the social rulebook. A rulebook which ensures solidarity between generations. A rulebook that rewards entrepreneurs who take care of their employees. Which focuses on jobs and opens up opportunities. Which puts skills, innovation and social protection on an equal footing." (President Ursula von der Leyen, 20 January 2021)

A foundation for Europe's competitiveness and sovereignty

The collective weight of these programmes signals the EU's recognition that human capital is its most strategic resource. Investing in talent is not only a matter of economic inclusion or social cohesion—it is a prerequisite for Europe's technological leadership and global relevance. In particular:

- A skilled workforce is essential to deploying, managing, and innovating with frontier technologies.
- Entrepreneurial education and culture foster risk-taking, creativity, and cross-border ventures.
- Mobility, role models, and peer networks help diffuse innovation and align regional strengths with EU-wide goals.
- Talent attraction and retention ensure that Europe can compete globally, not only with capital but with people.

This Volume expands on these dimensions in greater detail by examining policy gaps, highlighting best practices, and proposing concrete action. It sets the stage for a more integrated European talent and entrepreneurial strategy tailored to startups, fit for the challenges of the next decade.

Blue Card Directive (revised 2021)

The EU Blue Card Directive establishes the conditions of entry and residence of highly qualified non-EU nationals in 25 EU countries.

Choose Europe (2025)

An EC-backed initiative to attract scientists, researchers, academics and highly-skilled professionals to the EU, it puts an emphasis on scientific freedom. A €500 million package for the 2025–2027 period was established, along with a seven-year EIC "super grant", additional ERC financial support for researchers relocating to Europe and higher allowances and longer contracts for young EU fellowship beneficiaries.

Creative Europe programme

Creative Europe invests in actions that reinforce cultural diversity and respond to the needs and challenges of the cultural and creative sectors. It is divided into three categories: culture, media and cross-sectoral strand. The programme funds creative startups (e.g. gaming design, media tech) while supporting cross-border collaboration, innovation, and audience development.

Digital education action plan (2021–2027)

The digital education action plan is a strategy drafted to enhance digital literacy, infrastructure, and innovation in education across the EU. It cultivates a digitally fluent talent pool, essential for tech-driven startups. The digital education action Plan is a renewed EU policy initiative that sets out a common vision of high-quality, inclusive and accessible digital education in Europe, and aims to support the adaptation of the education and training systems of Member States to the digital age.

Entrepreneurship competence framework (EntreComp)

The EntreComp is a framework that defines the skills, knowledge and attitudes needed to be entrepreneurial, promoting creativity, resilience, and value creation. It provides a common standard for entrepreneurship education and helps align education curricula with startups needs.

Erasmus for young entrepreneurs

This is a cross-border exchange programme allowing aspiring entrepreneurs to learn from experienced founders in another EU country. It supports knowledge exchange and internationalisation of startup practices while encouraging the development of transnational startup ecosystems.

EU talent pool pilot & talent partnerships

The EU talent pool and talent partnerships aim to create the first EU-wide matching tool to facilitate international recruitment to make the EU more attractive to skilled workers from non-EU countries and help employers find the talent they need.

European education area (2025)

The European education area initiative helps European Union member states work together to build more resilient and inclusive education and training systems. More concretely, efforts are targeted towards improving quality and equity in education and training, supporting teachers, trainers and school leaders, digital education, and green education. It boosts educational collaboration opportunities for startup involvement.

European Innovation Council – women techEU & pathfinder

The EIC's wide range of programmes includes women techEU, which offers first-class coaching and mentoring to female founders, as well as targeted funding to help take their business to the next level. The EIC pathfinder supports deep tech projects by funding early-stage research and offering business acceleration services. It provides early-stage funding and mentoring, especially to underrepresented groups, and encourages breakthrough innovation from research to market.

European pillars of social rights

Among the 20 principles under the umbrella of these pillars, the first one "Education, training and life-long learning" addresses the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable EU citizens to participate fully in society and manage successfully transitions in the labour market.

European Research Area (ERA) – Talent and researcher mobility

The European Research Area (ERA) is the ambition to create a single, borderless market for research, innovation and technology across the EU. By strongly aligning their research policies and programmes, European countries become more effective on the research sector. The ERA is based on excellence and prioritises investments and reforms in R&I, boosts market uptake, strengthens mobility of researchers and free flow of knowledge and technology, and improves access to excellence.

European skills agenda (2020-2025)

The European Skills Agenda is a five-year plan to help individuals and businesses develop more and better skills and to put them to use, by strengthening sustainable competitiveness, ensuring social fairness, and building resilience to react to crises.

European strategy on research and technology infrastructures (2025-2027)

The strategy ensures that scientists, researchers, innovators, and industry have easy access to Europe's cutting-edge facilities, high-quality data and tailored services. It also aims to encourage world-class researchers and innovators to 'Choose Europe'.

European year of skills (2023-2024)

The European year of skills helped people get the right skills for quality jobs and supported companies in addressing skills shortages in Europe.

New European innovation agenda (2022)

The new European innovation agenda aims to position Europe at the forefront of the new wave of deep tech innovation and startups. It helps Europe to develop new technologies to address the most pressing societal challenges, and to bring them on the market through innovation procurement, a pivotal demand side instrument to modernise public services with innovation solutions while boosting the growth of innovative companies in Europe.

NextGenerationEU & Recovery and Resilience Facility – human capital and innovation culture

Both programmes were created to recover from the Covid-19 pandemic. Challenges related to human capital are addressed with priorities such as digital skills, green skills, education system modernisation, youth employment and inclusion, and lifelong learning. Innovation and entrepreneurship is supported through funding for R&D, startups and SMEs, digital and green innovation, higher education and research institutions, and clusters and innovation hubs. In short, they fund national programmes that can boost startup ecosystems.

SME strategy for a sustainable and digital Europe

The strategy aims to contribute to the objectives of the European green deal, the digital decade, and other EU actions launched in the context of the digital twin and green transition by focusing on three main pillars: 1) capacity-building and support for the transition to sustainability and digitalisation, 2) reducing regulatory burden and improving market access, 3) improving access to finance. It aligns startup goals in innovation, digitalisation and sustainability, while providing regulatory relief, access to finance and market support.

Supporting labour mobility: EURES Portal & EURAXESS

EURES helps and supports jobseekers to find jobs and employers to find suitable candidates across Europe. EURAXESS is the largest pan-European initiative to foster researchers' mobility and career development.

Youth guarantee & youth employment initiative

These initiatives aim to support young people living in regions where youth unemployment is higher than 25%. It supports young people who are not in education, employment or training by typically providing apprenticeships, traineeships, job placements or further education leading to a qualification. It give startups access to supported young talent while helping reduce early-stage hiring costs.

Strategic framework references (Draghi and Letta reports)

The future of European competitiveness – A competitiveness strategy for Europe, Mario Draghi

The Draghi report put an emphasis on specialist, transversal and managerial level skills that are required for the green and digital transitions while acknowledging the shrinking labour force due to demographic changes. It is estimated that more than one in three workers (37%) lacks basic digital skills in Europe, while 63% of EU-based companies report difficulties in recruiting ICT professionals.

These figures inevitably lead to a workforce mismatch, having at its core a poor alignment between education, training and labour market needs, resulting in over- or underqualification. This impacts resources at every level, as an European Investment Bank (EIB) survey[46] indicates that 81% of companies point at lack of skilled workforce as a major investment barrier. With a growing demand for ICT, health or engineering sectors, the focus shifted to building and complementing machines for increased efficiency.

[46] Delanote, J., & Zeppi, M. (2023). *EIB Investment Survey 2023: European Union overview*. European Investment Bank. https://www.eib.org/attachments/lucalli/20230285_econ_eibis_2023_eu_en.pdf

Following Draghi's arguments, Europe reached such an imbalance by facing the following challenges:

1. **A declining education system performance,**
2. **Limited adult learning,**
3. **A shrinking active labour force,**
4. **Low labour mobility.**

A declining education system performance and limited adult learning

Within the framework of the offer and demand mismatch, companies have better awareness of the skills required for their businesses to thrive. However, they lack incentives to train workers, and dialogue with training centres tend to be limited. Some initiatives have recently emerged to address this discrepancy, such as Czechia's Compass that anticipated labour market needs [47].

The report highlights that only 37% of adults received training in 2016, accounting for a minimal increase since that year. With a 60% participation goal, the EU's objective requires training approximately 50 million more people. As the term "training" is quite broad, clearly defining what it entails would be key.

[47] Cedefop – European Centre for the Development of Vocational Training. (n.d.). *Compass: Skills anticipation system.* Retrieved September 2025, from https://www.cedefop.europa.eu/en/tools/matching-skills/all-instruments/compass-skills-anticipation-system

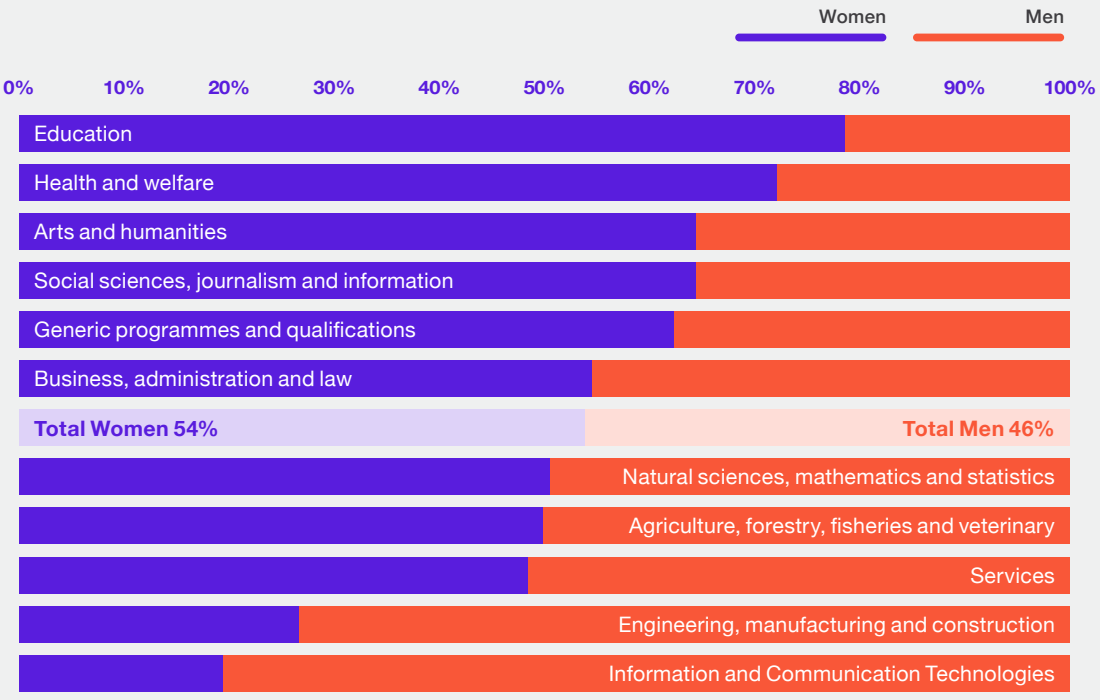


Figure 8. Gender gap across fields of study
Source. European Commission

Nevertheless, things are going to the right direction: there are 22 STEM graduates per 1,000 individuals aged 20-29 (up from 18.5 in 2014) today. The Finnish education system is also often highlighted as a positive case, including for adult training. While early STEM fields such as coding included a higher number of women, this trend has clearly shifted, as indicated in the previous graph.

A shrinking active labour force

It is well known that Europe's population is rapidly ageing. With a significant longer life expectancy and delayed retirement age, lifelong learning is no longer a "nice-to-have", but a necessity. It is however still underdeveloped in most EU education and training systems. Some Member States established some training schemes for workers, such as the Compte Personnel de Formation in France. Immigration is also an option that should be considered to broaden the pool of workers, and talent attraction should follow a holistic approach by acknowledging housing, taxes, childcare, and inclusivity in addition to salaries.

Low labour mobility

Draghi notably suggests looking into EU-recognised certifications to enhance mobility. An "academy of skills" is also offered as a solution to address skill gaps and should be included in the EU strategy.

Much more than a market, Enrico Letta

Letta's Report particularly highlights the following issues: regional development and labour mobility, talent relocation and retention, remote work and digital workforce, skills and training initiatives, labour market and professional opportunities, and external cooperation.

Regional development and labour mobility

Attractivity is unequally distributed across European regions, and some suffer from lack of jobs, poor education access, and inadequate services. As a result, residents often feel like they have no choice but to relocate. This phenomenon may be observed at a greater level, with a number of countries more affected by brain drain than others in the EU. Fostering cross-border opportunities is a first lead towards higher labour mobility. Additionally, a more harmonised income tax framework would support free movement of workers, but also goods and services. Paired with less burdensome regulation - which particularly impacts SMEs - this would bolster an efficient Single Market. By implementing such policies, citizens' ability to remain in their home regions, not just relocate, would be greater.

Returning diaspora and talent retention

While it is essential to attract bright minds from third countries, Europeans who left the continent often remain an untapped resource. Schemes such as grants to encourage EU nationals and researchers

to return to their home countries - which could be implemented under Interreg or European Universities Initiative - can be an opportunity for these talents to relocate. As 82 regions in 18 Member States (which approximately equals to 30% of the total EU population) have shrinking working-age populations[48], these areas should consider measures addressing a "talent development trap".

Remote work and digital workforce

There is currently no unified EU legal framework for employees working remotely from another EU country, and legal barriers are numerous when it comes to cross-border work. Letta advocates for a digital cross-border worker regime as way to establish a proper framework for telework in the EU.

Skills and training initiatives

The CEDEFOP is highlighted as a relevant initiative as it plays a central role in vocational training in the region. Moreover, online education offers several advantages, among which democratising learning by making it more flexible and therefore accessible.

Labour market and professional mobility

Automatic diploma recognition would be an excellent first step towards easing labour shortages. In addition to taxes, social security is a significant barrier to telework. As long as the Electronic Exchange of Social Security Information (EESSI) is yet to be fully implemented by the Member States, issues with cross-border remote work will persist. The European Labour Authority (ELA) was also quoted as a particularly relevant stakeholder and should support clarification on the legal framework.

External cooperation

The European Training Foundation (ETF) was also identified as an agency that would be of relevance for this topic, as it collaborates with neighbouring and Central Asian countries to develop education, training, and labour market systems.

Entrepreneurship and talent-related policies

While a variety of initiatives were designed to attract and retain talent in the EU, they have been implemented in a fragmented and isolated manner. It is therefore challenging for wider audiences to keep track of institutional efforts to execute them.
To ensure lasting progress and garner widespread public support, the EC must openly collect and share feedback, expand stakeholder engagement, and introduce a unified platform to monitor efforts to foster sills development. By implementing innovative, more inclusive digital tools that enable real-time tracking of the Commission's progress, it can achieve significant results and broader societal backing — heeding Ursula von der Leyen's mission letter call

[48] European Commission. (2023, January 17). *Harnessing talent in Europe's regions* (COM (2023) 32 final). https://ec.europa.eu/regional_policy/sources/communication/harnessing-talents/harnessing-talents-regions_en.pdf

to “leverage the power of digital tools to deliver better and faster solutions”.

While biannual reports are commendable, the EC ought to consider embracing digital tools (as outlined in Ursula von der Leyen’s Political Guidelines) to better support their progress. Although the EU has made some progress in refining ideas for the single market, defence, and competitiveness through the reports by Enrico Letta, Sauli Niinistö, and Mario Draghi, it should also reflect on whether professional development and attracting highly-skilled workers themselves ought not to be addressed in a similarly strategic manner.

1. State of play of the EU policy landscape: Political guidelines, EU Mission Letters under Talent

Ursula von der Leyen’s political guidelines particularly highlight simplification measures for SMEs and speedier processes. With the nomination of the new College of Commissioners in late 2024, skills and labour gaps were highlighted as a priority. The Union of Skills was presented as a key driving force for training people across the Union. Tech and secondary VET degrees were also flagged within the framework of the STEM Education strategic Plan and the European Strategy for Vocational Education and Training, focusing on practical skills readily applicable across the market. In addition to gaining new competences, the Skills Portability Initiative highlights the need to ensure proper cross-border diploma recognition.

This chapter maps policies in the EU and Member States to assess how both levels support competitiveness in the EU, more specifically for to the startup and scaleup ecosystem. The implementation of EU initiatives may vary from one country to another, which may also highlight some disparities not only in terms of efficiency, but the diversity of nations that make up the EU.

Keeping consensus is a difficult balance act, whether it is meeting all countries halfway or enacting laws that minimise any potential burden. In order to support these efforts, ESNA provides some tools to policymakers at national levels, which eventually impact European policymakers. The SNS Report, which monitors start-up-friendly policies in European countries on an annual basis, is a valuable resource to take stock of the regional situation when it comes to topics that are particularly relevant for small, innovative companies. Furthermore, the Best Practices Catalogue showcases initiatives from various parts of the world that have the potential to inspire European lawmakers to develop their own, country-tailored regulation.

To understand the major activities that support the EU Startup and Scaleup Strategy, a general timeline of main events was put together:

17/04 2024

Letta Report

"Much More than a Market"

18/07 2024

Ursula von der Leyen's Political Guidelines

"Europe's Choice: Political Guidelines for the Next European Commission 2024-2029"

09/09 2024

Draghi Report

"Report on the Future of European Competitiveness"

05/11 2024

Appointment of Commissioner for Startups and Scaleups

Ekaterina Zaharieva (Bulgaria) was approved by the European Parliament as the EU's first Commissioner for Startups, Research, and Innovation

29/11 2024

Launch of the ESNA Compendium

5 building blocks: Red Tape, Investment, Talent, Entrepreneurial Culture and IP Tech Transfer

01/12 2024

Establishment of the Project Group on Startups and Scaleups

Project Commissioners: Ekaterina Zaharieva, Henna Virkkunen, Maria Luis Albuquerque, Michael McGrath, Stéphane Séjourné, Valdis Dombrovskis 2024- 2029

29/01 2025

EU Competitiveness Compass

An EU Compass to regain competitiveness and secure sustainable prosperity

May 2025

Release of the Startup & Scaleup Strategy

The Startup and Scaleup Strategy was presented by the EU Commission in Q2 2025

May 2025

Regulatory Barriers
Volume 1

June 2025

Investment Volume
Volume 2

Figure 9. General timeline. ESNA.

a. Political guidelines

President Ursula von der Leyen's overarching guidelines set the tone for the EC's strategic goals. Published in July 2024, these guidelines define six broad objectives to prepare the EU for the next seven years and beyond.

All these goals are directly or indirectly related to innovative companies. Startups are mentioned three times in the 31-page document, indicating that the EC does not leave them behind during this new mandate. The EU Startup and Scaleup Strategy was published in May 2025, going beyond the traditional outlook on SMEs.

While entrepreneurial culture is not a topic addressed in the strategy per se, its overarching objective is "for Europe to become a startup powerhouse". To do so, talent was identified as one of the five key pillars, among regulation, finance, market update and expansion and infrastructure. The talent section includes a series of upcoming measures such as the Fair Labour Mobility Package, EU Visa Strategy, Multipurpose Legal Gateway Offices, EU Blue Card Directive in addition to strengthening existing tools such as Euraxess, and furthering existing efforts made notably towards entrepreneurial education, stock options, or academic career development.

Key Political guidelines
A.1. Make business easier and deepen the Single Market
ESNA Volume: **Regulatory Barriers**

Key Political guidelines
A.2. Build a Clean Industrial Deal to decarbonise and bring down energy prices

Key Political guidelines
A.3. Put research and innovation at the heart of the economy
ESNA Volume: **IP Tech Tranfer**

Key Political guidelines
A.4. Boost productivity through digital tech diffusion
ESNA Volume: **Entrepreneurial Culture**

Key Political guidelines
A.5. Invest in sustainable competitiveness
ESNA Volume: **Investment**

Key Political guidelines
A.6. Tackle the skills and labour gap
ESNA Volume: **Talent**

b. EU Missions Letters

The Mission Letters were published in September 2024 with the intent to assign portfolios to the Commissioner-elect. They set guidelines for the proper delivery of their missions, highlighting strategic tasks. ESNA collected the missions mentioned in these letters and allocated them to relevant utmost goals in the table below. Various Commissioners have missions that either directly or indirectly contribute to these utmost goals, particularly regarding the startup and scaleup ecosystem.

A.1. Make business easier and deepen our Single Market		
Missions	**National/ EU level**	**Legislation type**
1. Digital Networks Act		
2. European Data Union Strategy (simplified legal framework)		
3. Horizontal single market strategy		
4. SME passport		
5. Single Digital Gateway		
6. Facilitate labour mobility	EU level	Legislative Act: Regulation (EU) No 492/2011
7. Review regulatory framework to help startup financing		
8. Digital Euro		
9. SME and competitiveness check "one in, one out"		
10. 28th regime	EU level	Conceptual framework (specific legislative acts to be defined)

A.2. Build a Clean Industrial Deal to decarbonise and bring down energy prices		
Missions	**National/ EU level**	**Legislation type**
11. European Green Deal - Clean Industrial Deal - Industrial Decarbonisation Accelarator Act / Net Zero Industry Act - Circular economy		

A.3. Put research and innovation at the heart of our economy		
Missions	**National/ EU level**	**Legislation type**
12. EU Cloud and AI Development Act		
13. Have capital markets that invest in Innovation		
14. Intellectual property policy		
15. European Research Area Act - "fifth freedom"		
16. Strategy European Research Infrastructure		
17. Strengthen Universities Alliances	National level	Policy initiative (implemented through funding programmes and collaborations)
18. European Innovation Act		
19. Advanced Materials Act		

A.4. Boost productivity with digital tech diffusion		
Missions	**National/ EU level**	**Legislation type**
20. Europe´s 2030 Digital Decade	EU level	Legislative Act: Decision (EU) 202212481
21. European Digital Rulebook		
22. Impact of digitalisation in the world of work	National / EU Level	Addressed through various legislative measures

A.5. Invest massively in our sustainable competitiveness		
Missions	**National/ EU level**	**Legislation type**
23. Defence industrial competitiveness		
24. New Industrial Strategy		
25. European Competitiveness Fund		
26. Invest EU programme		
27. Critical raw materials act		
28. New approach to competition policy		
29. SMEs and small midcaps killer acquisitions		
30. Increase availability of venture and other risk capital		
31. Enhance EIF to finance high-potential and fast growing EU companies		

A.6. Tackle the skills and labour gap		
Missions	**National/ EU level**	**Legislation type**
32. Quality Jobs Roadmap / Union of Skills / Pact for Skills	National / EU Level	Policy initiative (implemented through various programmes)
33. Talent Pool	EU level	Strategic initiative (details and legislative tools pending)
34. STEM Education Strategic Plan	National / EU Level	Policy initiative (to be supported through education and funding instruments)

Figure 10. EU Missions and their impact at national and EU level. ESNA analysis.

Apart from focusing on talent and skills development, the table above also identifies which authorities hold competencies over these topics, and how they are concretely turned into a legal shape. This is worth highlighting as their impact may vary accordingly. For example, while a regulation is binding and directly enforceable in the Member States, a directive acts more as a guideline for the EU countries. It is not directly applicable in national law, and it remains up to each Member State to implement them practically within a specific period of time - compliance levels may therefore vary. This eventually implies that various levels of enforceability lead to various levels of enforcement. A unanimous stance from the EU is not always necessarily reflected in all EU countries – and even if it does through a non-legally-biding mechanism, it will take time and may not achieve the desired level of uniformity.

2. The EU Competitiveness Compass under the talent and entrepreneurial culture lenses

The Commission presented the Competitiveness Compass in January 2025, a roadmap to support and restore Europe's dynamism and boost economic growth. It follows an analysis of Draghi's report, as it acknowledges three imperatives that were indicated as essential to reach competitiveness:

1. Closing the innovation gap

2. Reducing excessive dependencies and increasing security

3. Decarbonisation and competitiveness

Closing the innovation gap

The EU must reignite its innovation engine - to do so, startups and scaleups are fundamental. As mentioned in the EU Digital Compass, to create a habitat for young innovative startups, promote industrial leadership in high-growth sectors via deep technologies and promote the diffusion of technologies across established companies and SMEs, we need to take the following topics into consideration:

1. **AI Gigafactories**
2. **Apply AI**
3. **Advanced materials, quantum, biotech, robotics and space technologies**
4. **EU Startup and Scaleup strategy to address the obstacles that are preventing new companies from emerging and scaling up**

These topics will be further developed in Chapter III which assesses Europe's critical industries.

Five horizontal enablers for the competitiveness compass

The three pillars (closing the innovation gap, decarbonising our economy, and reducing dependencies) are complemented by five horizontal enablers (removing barriers in the single market, enabling more efficient financing, promoting skills and quality jobs, ensuring better coordination).

Union of Skills

The Union of Skills is the EU's comprehensive strategy to invest in high quality education, training, and lifelong learning, aiming to equip people with both basic and advanced skills. It ensures that people can regularly upskill and reskill, supports businesses in recruitment, and facilitates the free movement and portability of skills across EU countries. Furthermore, it seeks to attract, develop, and retain top talent – including from outside the EU – through initiatives like talent pools and visa strategies.

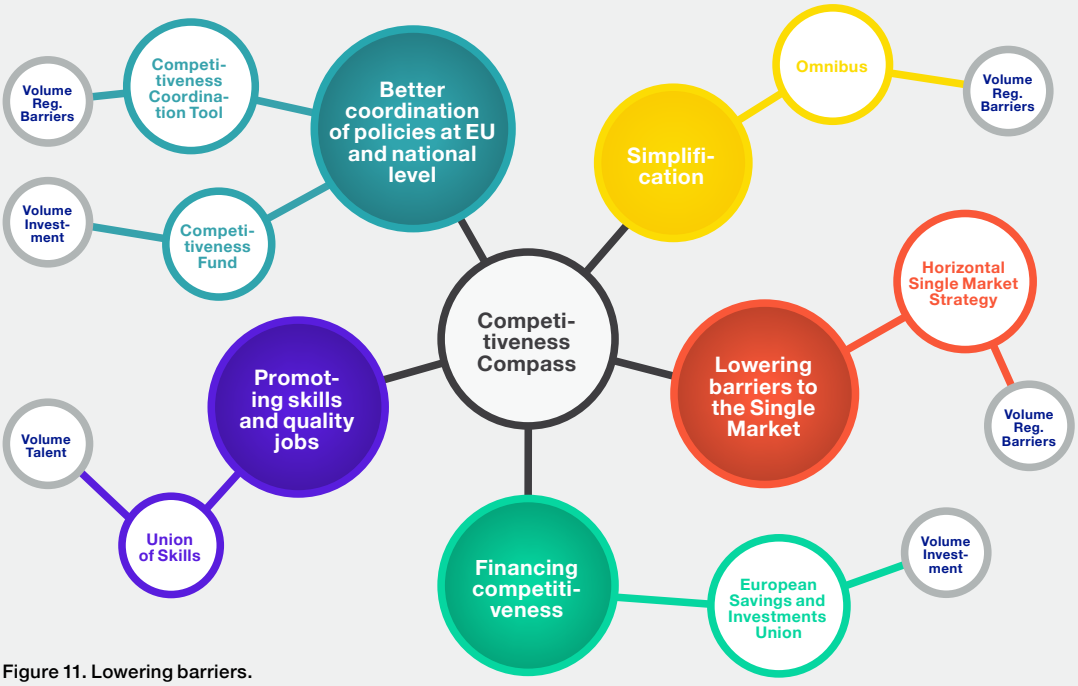


Figure 11. Lowering barriers.

Financial literacy

Financial literacy is a topic that has been gaining momentum for the past few years. While not expressly mentioned in the recently published EU Startup and Scaleup Strategy, the Better finance for startups and scaleups section highlights funding as a core requirement to a startup-friendly Europe. With a Financial literacy strategy[49] released in September 2025, the EU is taking hold of this issue with an objective to improve knowledge and behaviour, encourage retail investing, share best practices among Member States and support education and training, especially for disadvantaged youth.

The Savings and Investments Union, launched in March 2025, is a first step towards financial literacy. It intends to help citizens going beyond low-yield bank deposits and invest better, encourage capital market participation and support economic growth and innovation. With less than one EU citizen in five (18%) demonstrating high financial literacy[50], and great disparities observed among social groups, there is a lot left to be done. Improving financial education not only benefits citizens, but also entrepreneurship by

[49] European Commission. (n.d.). Factsheet: EU financial literacy strategy. Retrieved from https://finance.ec.europa.eu/consumer-finance-and-payments/financial-literacy/factsheet-eu-financial-literacy-strategy_en

[50] European Commission. (2023). Standard Eurobarometer 99 (Spring 2023): Public opinion in the European Union. Directorate-General for Communication. https://europa.eu/eurobarometer/surveys/detail/2993

1) facilitating business creation,
2) understanding funding opportunities,
3) making better financial decisions, eventually multiplying chances of success and scaling.

European Labour Authority (ELA)

Established in 2019, the ELA assists Member States and the EC in the coordination of social security systems in the EU to ensure fair and effective labour mobility.
While labour legislation is a national competence, the authority has a supporting role in the enforcement of EU-level rules where cross-border labour issues may arise. With its roots in the article 45 of the Treaty of the Functioning of the European Union (TFEU) related to the free movement of workers, it also addresses posted workers and social security coordination.
Beyond enforcing EU laws, it supports the 17 million EU citizens living and/or working in another Member State by providing them with information related to workers' rights through EURES, information exchanges between the Member States and helps fight undeclared work.
A 2025 evaluation by the EC notably highlights the need for greater digitalisation and a more consolidated EURES. Going forward, this entity could play a significant advisory role when establishing an EU-wide framework for telework. While theoretically accessible to many workers through digital tools, the reality of social security and taxes rules makes remote work often challenging, thereby limiting opportunities for workers based in less dynamic regions.

European Training Foundation

While the EU first and foremost serves EU citizens, it is also made up of external agencies that collaborate with third countries on a variety of topics. The ETF is one of them, as it supports neighbouring countries in their efforts to reform their education and training systems. With a comprehensive programme that ranges from green skills to qualifications systems or policy analysis, the ETF cooperates with countries located in Central Asia, Eastern Europe, Southern and Eastern Mediterranean, Sub-Saharan Africa, and the Western Balkans and Türkiye. While it aims to create and strengthen partnerships with these countries, they offer a relevant approach on some issues addressed in this Volume.

Highlights

In 2022, shortly after the Ukraine invasion, the ETF launched a platform[51] to help displaced Ukrainians get their diplomas recognised which gathers relevant information across the EU.

In the 2025 From skills anticipation to skills action report[52], the ETF assesses skills demand in EU neighbouring countries by notably focusing on digital and green skills, addressing mismatches and transitions by providing case studies.

[51] ETF — European Training Foundation. (n.d.). *Recognition of your higher education diploma*. Retrieved September 2025, from https://www.etf.europa.eu/et/faqs/recognition-your-higher-education-diploma

[52] European Training Foundation. (2025). From Skills Anticipation to Skills Action: Collection of articles to understand skills demand in EU neighbouring countries (ISBN 978-92-9157-750-7; Catalogue No. TA-01-25-004-EN-N; DOI 10.2816/3566823). Publications Office of the European Union.

a. European public funding and special framework: from EU to national level

General public funding

To understand the dynamic of capital flow and the relevance under the public lenses, it is important to highlight not only the amount of public investment that goes to innovation, but also the system that allows it to be distributed at a local level.

Eramus+

Erasmus+ is one of the best known flagship EU-led programmes. While it is mostly recognised for student exchanges, it addresses mobility through a broad range of topics from training to sport at all stages of life. Its current budget (26.2 billion euros) for 2021-2027 almost doubled since the last funding period[53].

Supported by Erasmus+ national agencies in each Member State, cross-border cooperation projects are also part of the scheme that is present in 33 countries. In this 2021-2027 funding period, the programme is founded in four pillars:

- **Inclusive Erasmus+:** specifically targeted at people with diverse cultural, social and economic backgrounds, and people living in rural and remote areas, it is particularly suited to small-scale partnerships, including with third countries.
- **Digital Erasmus+:** by focusing on digital transition of education and training systems, it notably encourages traineeships in the digital sector. Digitalisation also applies to the programme, which will launch the European Student Card.
- **Green Erasmus+:** Green Erasmus+: Financial incentives are provided to participants that use sustainable modes of transport, and awareness-raising and exchange activities related to climate issues will be implemented.

[53] European Commission. (2021, September 23). *Erasmus+: over €28 billion to support mobility and learning* (IP/21/1326). https://ec.europa.eu/commission/presscorner/detail/en/ip_21_1326

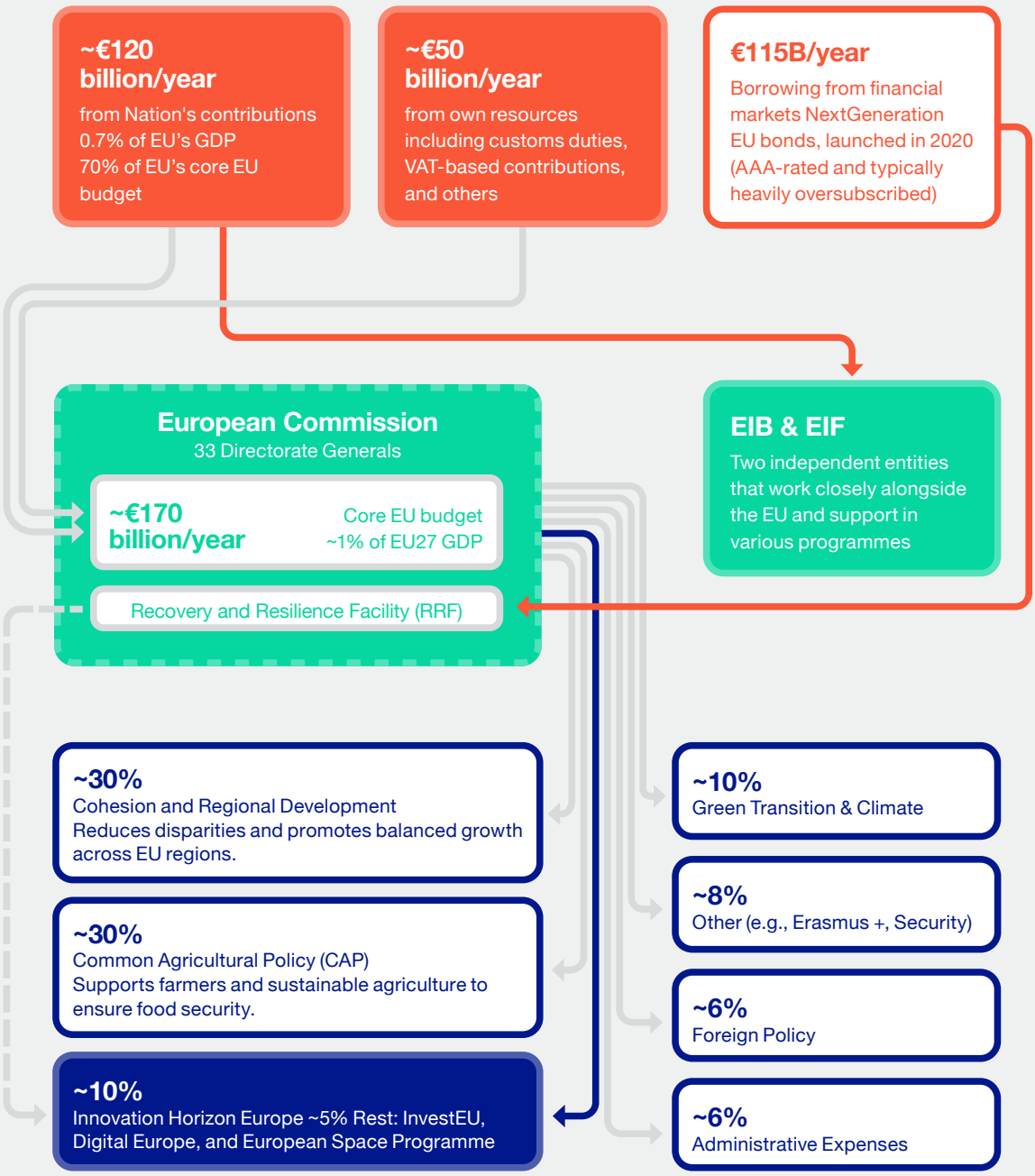


Figure 12. EU budget of GDP

Source: "Accelerating Europe – Part 1 of 3 – The State of European Innovation and Why It Matters", January 2025.

- **Erasmus+ for young people:** 18-year-old EU citizens are granted the opportunity to travel across Europe with a rail pass. This section also relates to promoting European values and fostering participation in democratic life through cooperation activities.

The scheme helps foster talent development and entrepreneurial culture in Europe by reaching citizens of all ages - from apprentices to seniors – in various cultural and professional contexts. It also teaches soft skills along the way that can be particularly relevant in an entrepreneurial context.
Initiatives such as Erasmus for young entrepreneurs which offers prospective founders international mentorship highlights the variety of Erasmus+ schemes.

When it comes to general public funding set to support Innovation, the EU budget, managed by the EC, amounts to around €170 billion per year. It is funded through Member States' contributions (€120 billion/year) and the EU's own resources (€50 billion/year). In addition, the EU raises up to €115 billion per year through borrowing on financial markets under the NextGenerationEU programme — a separate recovery instrument. The annual EU budget is allocated across various sectors: 30% for Cohesion & Regional Development, 30% for the Common Agricultural Policy, 10% for innovation (Horizon Europe, InvestEU, Digital Europe, and the European Space Programme), 10% for Green Transition & Climate, 8% for programmes such as Erasmus and security, 6% for foreign policy, and 6% for administrative costs. The EIB and European Investment Fund (EIF) work alongside the EU to support various initiatives. This budget structure aims to ensure balanced regional growth, sustainability, innovation, and economic resilience across the EU.

Coordination of capital flow

In terms of coordination, the system involves with the EU Member States, the EIB and the EC as the main coordinators of funds distribution. Alongside them, the EIF also plays a role. The funding supports a diverse range of projects and programmes, such as InvestEU, the EUChip Act, and the Framework Programme (FP) 9 - also known as Horizon Europe - which allocates a total of €95B to Research & Innovation.
The coordination role of the Horizon Europe Programme is divided into four different entities: Directorates General (DGs) and agencies, EIC, European Research Council (ERC) and EIT, which are responsible for allocating those funds in grant, equity investments and co-investing in innovation projects

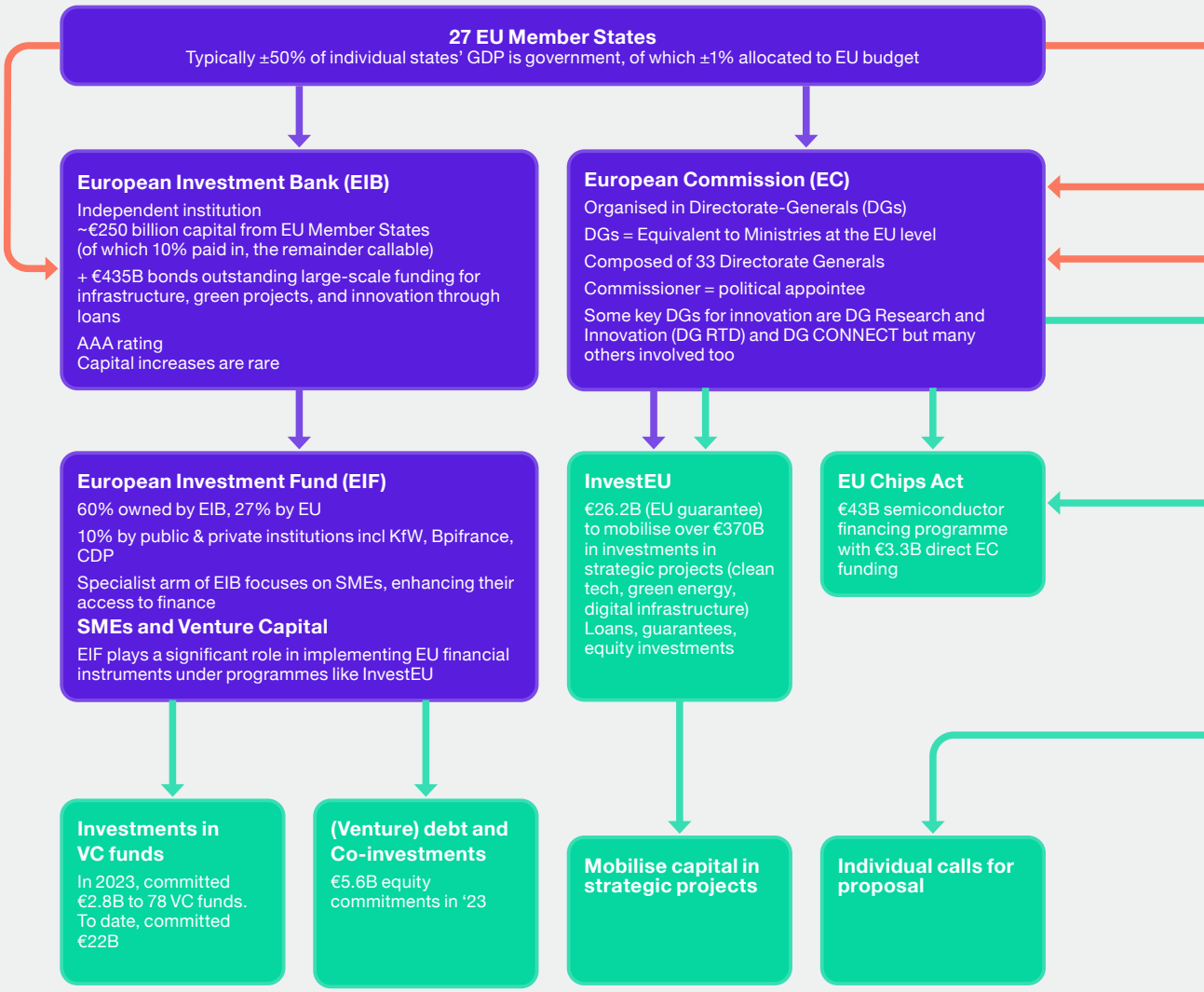
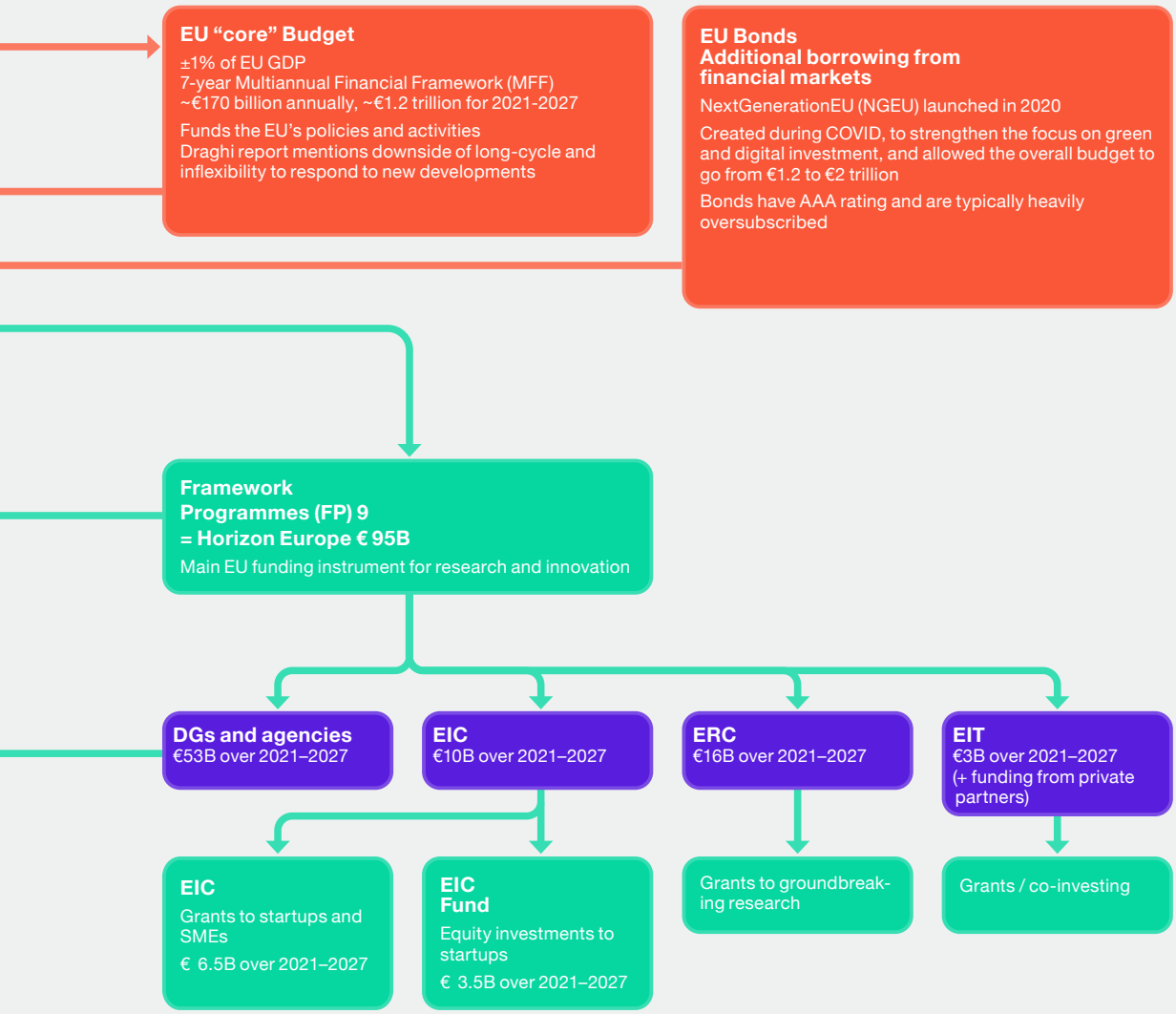


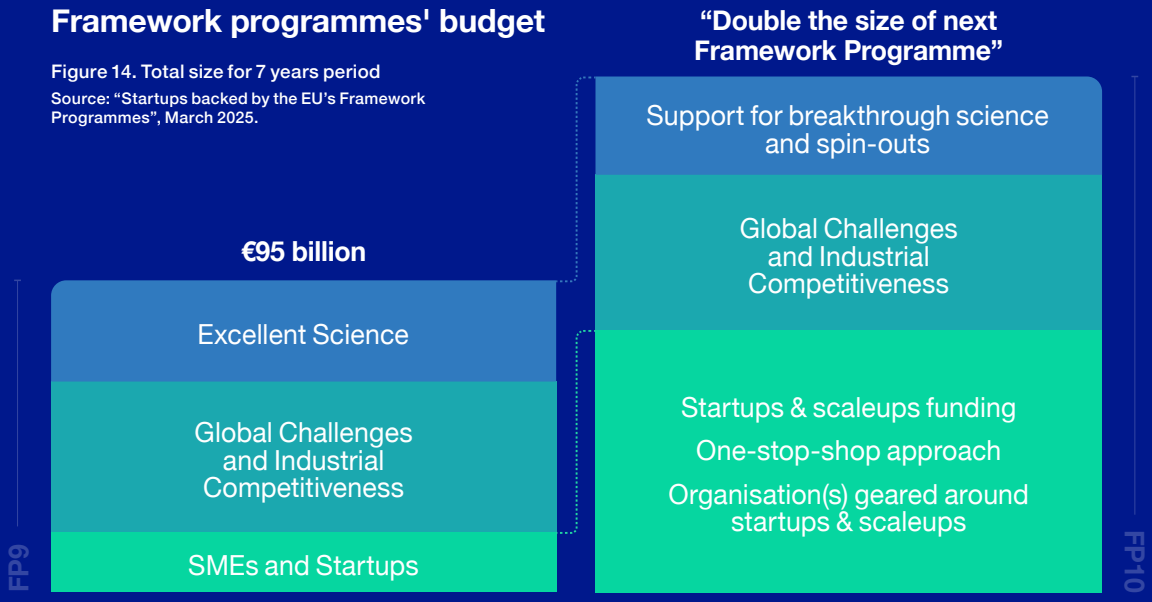
Figure 13. Dr Simplification of EU architecture.

Source: "Accelerating Europe – Part 1 of 3 – The State of European Innovation and Why It Matters", January 2025.



Framework programmes' budget

Figure 14. Total size for 7 years period
Source: "Startups backed by the EU's Framework Programmes", March 2025.



Next step on Horizon Europe: acknowledging FP10

Mario Draghi acknowledges in his recent report that clean technologies should be one of the strategic priority areas of FP10. It implies:

- A *dedicated new competitiveness joint undertaking for applied and breakthrough industrial research* where the EU can become a leader for the next generation technologies.
- The objective is to attract adequate resources for the deployment of first-of-its-kind tech, particularly for large-scale projects and related infrastructure.
- A particular focus on the *revamped breakthrough innovation programmes* which would notably include:

  - Offering *various instruments adjusted to different TRLs* (Technology Readiness Level, which measures at which development phase a product is).
  - FP10 should extend to the phase of deployment to market.
  - *Public R&D spending in the EU is highly fragmented across Member States, not consistently directed towards EU-wide priorities, and often difficult to access.*

As of publication date, no consensus was reached on the format of the upcoming Framework programme.

It is worth noting that in March 2025 the EC announced through its White Paper for European Defence and the ReArm Europe Plan[54] that the EIC and the anticipated TechEU Scale-up Fund will be able to invest in dual-use technologies, shifting from civilian application only to supporting defence efforts:

> *"In recent years, we have worked ever more closely to respond to the threats we face. But this is not going to be enough for the years ahead. Europe must do far more if it is to restore credible deterrence and deliver the security on which our prosperity depends. This requires all Member States to act in solidarity and to invest in our collective defence" (Page 1, European Defence and the ReArm Europe Plan, White Paper).*

Some of the concepts highlighted in this document can be linked to the growing hybrid threats, which include cybersecurity-related needs and electronic interface in global navigation and satellite systems. Additionally, the global technological race brings about a new approach to competition in a connected world that has clear needs in terms of technologies development such as AI, quantum, biotech, or robotics.

Finally, regarding sovereignty and the possibility for Europe to be competitive under a more long-term logic, the critical raw materials, fundamental for this industrial and economic growth, are also mentioned.

3. European Competitiveness Fund (ECF) – structure and alignment with critical industries

Overview of the ECF

The ECF is a new investment framework proposed for the EU's post-2027 budget that stems from Mario Draghi's report. It aims to consolidate numerous existing funding programmes (around 14 instruments) into one fund focused on boosting Europe's competitiveness in strategic technologies and sectors. It entails unifying support across the whole innovation lifecycle – from research and innovation to scaleup, industrial deployment, and manufacturing – in industries deemed critical for the EU's economic resilience. By pooling resources and instruments, the ECF is designed to address current problems of fragmented and overlapping programmes, ensuring coherent support along the investment journey for European projects and companies. In short, the ECF's mission is to strengthen EU competitiveness, close the innovation gap, accelerate the green and digital transitions, and reduce strategic dependencies in key sectors.

[54] Note: The mentioned White Paper provides a framework for the ReArm Europe plan for an ecosystem of technological innovation. It sets out the necessary steps to rebuild European defence, such as: Ukraine support, address critical capability, establish a strong and competitive defence, between other topics. Along this, it's also highlight several critical capability areas where there are still gaps that need to be overcome.

Strategic policy pillars

To target investments effectively, the ECF will likely revolve around thematic verticals (or pillars) aligned with the EU's priority industrial domains, which are likely to make a significant impact on both entrepreneurial culture and talent. Each pillar corresponds to a broad strategic area that is crucial to Europe's competitiveness and resilience, ensuring that funding is directed to critical industries in that domain[55].

Clean transition & industrial decarbonisation Supporting climate-friendly technologies, clean energy, sustainable industry, and the EU's green transition (e.g. renewable energy, clean tech, circular economy, decarbonising industrial processes). This pillar aligns with Europe's push for industrial decarbonisation and clean tech innovation, crucial for both competitiveness and climate goals.

Digital leadership Focusing on digital technologies such as AI, semiconductors, digital infrastructure, and advanced computing. This vertical targets the EU's digital and AI industries, aiming to boost Europe's capabilities in key digital technologies and reduce reliance on external providers.

Health, biotech, agriculture & bioeconomy: Investing in healthcare innovation, biotechnology, pharmaceuticals, medical research, sustainable agriculture, and the bio-based economy. This ensures dedicated support for health and biotech industries and related fields that are critical for public health resilience and food security in Europe.

Resilience & security (including defence and space) Strengthening Europe's defence industry, space capabilities, and other security-related sectors (cybersecurity, critical infrastructure, etc.). This pillar addresses industries vital for the EU's strategic autonomy and security, such as defence manufacturing and the space sector. It reflects the EU's recognition that areas such as defence and space technology are increasingly linked to economic competitiveness and require coordinated investment.

Alignment with critical industries

These four sectors collectively map the critical industrial ecosystems and technologies that the EU considers essential for its future[56]. By design, the ECF's envisioned content mirrors the Union's key strategic priorities – from AI and digital tech to clean energy, from biotech and health to defence and space. In other words, the fund's architecture ensures that Europe's most crucial sectors (digital, green, health, and security-related industries) each have a dedicated support channel. This alignment ensures that EU initiatives such as the Green Deal, the Digital Decade, the EU Chips Act, health preparedness plans, and

[55] BST Europe. (2025, May 28). From fragmentation to strategy: Building a smart European Competitiveness Fund – Recommendations. https://bst-europe.eu/competitiveness-innovation/recommendations-european-competitiveness-fund/

[56] Note: further details on Critical industries may be found in Chapter III.

defence cooperation can all receive coordinated funding under the ECF's respective windows, rather than being scattered across separate programmes. By focusing on these pillars, the ECF concentrates resources on the industries that will drive European competitiveness and strategic autonomy in the coming years.

Open Architecture and Flexibility

A core feature of the ECF is its "open architecture," which gives the fund the flexibility to adapt to new challenges and policy priorities. Rather than rigid budget silos, the ECF's design allows policymakers to quickly redirect focus or funds as needed within the broader scope. In practice, this implies that the ECF can effectively target support across the entire value chain – from applied research to prototype development, and from infrastructure build-out to skills training – depending on what each strategic sector needs most at a given time. This flexible setup is intended to future-proof the fund: as new technologies emerge or unexpected economic challenges arise, the ECF can respond without needing a complete overhaul of its structure. Notably, the EC is expected to have some ability to reallocate funding between the policy windows within defined limits, using delegated acts (for example, shifting a modest percentage of funds from one pillar to another if priorities change). Such mechanisms ensure that the ECF remains agile, steering investments where they are most needed to bolster EU competitiveness.

Unified financial toolbox for investment

Unlike traditional funds that are limited to grants or a single support mode, the ECF will mobilise the entire spectrum of financial instruments available in the EU budget. Each policy pillar can deploy a common toolbox of funding instruments - including grants, loans, equity and quasi-equity investments, guarantees, blending of grants/loans, and even public procurement where suitable. By having all these tools under one roof, the ECF can tailor the support to the needs of projects and companies in critical industries:

- High-risk R&D projects might receive grants or research funding to spur innovation.
- Promising startups and scaleups might benefit from equity investments or guarantees to unlock private capital.
- Infrastructure projects (e.g. digital networks or clean energy facilities) might use blended finance or loans to leverage larger investments.
- SMEs in strategic sectors could access dedicated loan guarantees or advisory services to grow their business.

Crucially, all policy windows share access to this toolbox, breaking down the silos that previously tied certain instruments to specific programmes. This integration means, for example, that a clean-tech project could find grant support for early R&D and later secure a loan guarantee for scaling up. The ECF's ability to "de-risk" private investment by using guarantees and other leverage tools is expected to

attract additional private and national co-investment into Europe's priority sectors. Overall, the unified toolbox approach increases efficiency and coherence: whatever the critical industry – be it microchips or hydrogen power – the ECF can deploy the right financial mix to support it from lab to market.

In addition to financial aid, the ECF will provide advisory support and skills development to complement funding. This supportive ecosystem is especially important for newer and smaller actors in critical industries – including startups - ensuring they not only receive funding but also the know-how and networks to succeed.

4. 28th Regime Proposal (ESNA) [57]

The 28th Regime is intended as an optional legal framework applicable in EU27 countries. Based on a digital-first approach, its objective is to simplify cross-border company setup and management across the EU, especially for SMEs and startups. As the 28th Regime is being prepared, ESNA developed a roadmap based on four pillars:

- A digital EU-wide legal framework
- An EU-wide employee share option plan (ESOP)
- Public procurement accessibility for startups
- Legal coexistence with national frameworks

More details on these recommendations may be found in the Regulatory Barriers Volume. This framework remains particularly relevant for fostering talent development and entrepreneurial culture, as it would lift significant barriers to intra-EU mobility related to administrative processes. With the implementation of the 28th regime, companies could employ workers from regions that are particularly affected by brain drain, while allowing founders to focus on innovation instead of time-consuming branch opening procedures.

Pillar 1: A digital EU-wide legal framework

1.1. EU Registry with One Point of Contact

The EU Registry would serve as a single access point for founding and operating under the 28th Regime. It would:

- Be interoperable across all 24 EU languages;
- Align with eIDAS 2.0 for digital identity verification (Regulation (EU) 910/2014);
- Integrate with BRIS and national company registers (Directive (EU) 2019/1151);
- Use the Once-Only Principle (OOP), avoiding redundant data submissions.

[57] Rossi, C., Desoche, M., & Macedo Pinto, P. (2025, May). Building a competitive Europe: The role of startup and scaleup ecosystems — Volume I: Regulatory barriers (red tape). European Startup Nations Alliance. https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.i-regulatory-barriers.pdf

Key benefit

Reduction of administrative burden and cross-border friction.

1.2. Simplified incorporation

Aligned with SNS #1 Fast Startup Creation and SNS #8 Digital First, incorporation should:

- Take less than 24 hours (real-time processing);
- Cost under €100;
- Be conducted fully online, without notaries or in-person bureaucracy.

Model example

Estonia's e-Residency + company registration system.

1.3. Exit and winding-up framework

To ensure lifecycle flexibility, the 28th Regime would offer:

- Standard winding-up procedure (voluntary and fast-track)
- Access to a fast-track European restructuring or insolvency process, consistent with Regulation (EU) 2015/848

KPI

Incorporation speed

- 95% registered in <24h

Cost control

- <€100 for basic information

Exit readiness

- % of firms using EU-wide exit tools

Pillar 2: EU-wide Employee Share Option Plan (EU-ESOP)

Challenge

Fragmented and tax-inefficient systems

Currently, stock options across Member States differ in:

- Taxation points (grant, vesting, exercise, sale)
- Recognition of fair value
- Voting/information rights of holders

This discourages cross-border scaling and talent retention.

Suggestion

A Pan-EU ESOP Framework

Inspired by best practices from France (BSPCE), the UK (EMI), and Estonia (founder shares):

- Only economic rights (no voting, information, or board rights)
- No taxation until a liquidity event (e.g., sale or IPO)
- Standard option plan templates integrated into the EU Registry
- Recognised under national tax regimes via an EU "pass-through" tax certificate

KPI

Adoption rate

- # of startups using EU-ESOP per Member States

Talent mobility

- % of ESOP holders using Blue Card adaptation

Economic impact

- Capital gains deferred under EU-ESOP

Blue Card adaptation

The *EU Blue Card* (Directive (EU) 2021/1883) currently applies to highly skilled workers. A revision could be extended to cover startup employees and co-founders participating in ESOPs

Feature
Eligibility
Current Blue Card
Salary threshold
28th Regime proposal
Include ESOP-based remuneration

Feature
Contractual proof
Current Blue Card
Formal job offer
28th Regime proposal
ESOP agreement and founding contract

Feature
Talent retention
Current Blue Card
Limited
28th Regime proposal
Extended residency tied to vesting

Pillar 3: Public procurement accessibility for startups

Challenge

Despite Directives 2014/24/EU and 2014/25/EU, startups often face:

- Complex tender requirements;
- Difficulty meeting turnover/experience thresholds;
- Low visibility of open calls.

Suggestion

- 28th Regime startups are automatically listed on a central EU procurement dashboard;
- Create a “startup track” with simplified pre-qualification;
- Recognise innovative procurement methods (e.g., design contests, sandbox trials).

Pillar 4: Legal coexistence with national frameworks

The 28th Regime must be

- **Optional:** Does not override national legal systems
- **Recognised:** Member States accept its legal documents and tax statuses

Key components

- **Common language:** Legal documents available in all EU languages
- **Common company ID:** Standardised EU-level registration number
- **Standard templates:** For Articles of Association, ESOP plans, board appointments

Director responsibility

- Align with **Directive (EU) 2019 / 1023** (preventive restructuring)
- Introduce an **EU Safe Harbour Rule:** Directors are protected when acting in good faith under 28th Regime rules
- **Digital signature traceability** (via eIDAS) to ensure compliance and transparency

Other concepts that are correlated to the 28th Regime

Simplification of the EU rulebook

To foster a more efficient and supportive legislative framework for startups and investors, the EU could benefit from a streamlined regulatory agenda that emphasises simplicity and accessibility in its laws. Developing standard contract templates and simplifying the EU rulebook would remove complexities in investment and compliance procedures, making it easier for startups to navigate regulatory requirements and for investors to engage confidently across borders, this principle connected with action.

In line with Simplification Agenda: prioritise SME test and streamline regulatory processes

SME test (also referred to as the "Think Small First" approach), should be applied by the European Commission as well as by the European Parliament and the Council. For this to take place an analysis should be done to consider the indirect and cumulative impact of legislation on SMEs and/or startups today. The recommended principle would be to have a case-by-case

approach, as the diverse scenarios for tech companies (startups) may differ regarding, especially, industry. In terms of legislation, this may also vary. To do so, some concrete actions must relate to the need of having a horizontal review of all EU legislation applying to startups and scaleups and seeking to minimise requirements applied by host Member States to startups and scaleups passporting services to other Member States (e.g. payment services).

Aim for the creation of a "One-Stop Shop" for startup registration (under a shared EU Identity) and compliance, reducing bureaucracy and simplifying legal processes to help startups launch and operate smoothly on any of the 27 EU Member States. Removal of cross-border barriers/obstacles for startups and scaleups. Progress should be adequately monitored and measured (e.g.: setting KPIs).

Europe stands at a decisive moment: while the continent boasts world-class universities, leading regulation, and strengths in critical sectors, its startup and scaleup ecosystem still lags behind global competitors due to gaps in risk culture, fragmented markets, and brain drain, as we acknowledged in Chapter I.

Therefore, the EU's future competitiveness and sovereignty depend on embedding entrepreneurial culture into every layer of society - shifting attitudes towards risk, normalising experimentation, and building cross-border networks that empower people to create and scale[58]. Talent attraction, reskilling, and mobility are not solely policies targeted at the workforce but strategic levers to anchor innovation within Europe. Financial literacy, university-driven entrepreneurship, and founder communities must reinforce this cultural shift. By turning abundant ideas and talent into global-scale companies, Europe can secure its place as an innovation powerhouse and ensure its long-lasting sovereignty in a rapidly changing geopolitical and technological landscape.

[58] Note: More details in the next chapter.

Main takeaways

• **EU Treaties provide a strong legal base** (Articles 145–160 TFEU) for coordinated action on employment, skills, and labour markets.

• **Large-scale EU funding for talent exists:** ESF+, Erasmus+, Horizon Europe, RRF and NextGenerationEU allocate billions to talent, education, and skills.

• **Von der Leyen's guidelines and Mission Letters** highlight talent, simplification for SMEs, and a Union of Skills as political priorities.

• **Draghi Report (2024):** Europe faces a depleted talent pool, skills mismatches, limited adult learning, shrinking labour force, and low mobility.

• **Letta Report (2024):** stresses labour mobility, return migration, diploma recognition, remote work frameworks, and tackling regional brain drain.

• **Competitiveness Compass (2025):** talent and entrepreneurial culture are cross-cutting enablers to close the innovation gap and boost resilience.

• **Savings and Investment Union (2025):** financial literacy and citizen participation in markets are vital to channel €10 trillion in household savings into productive innovation.

• **European Labour Authority:** supports fair labour mobility and could play a key role in building a legal framework for EU-wide telework.

• **ETF:** strengthens external cooperation and talent development in neighbouring regions (e.g. Ukraine, Central Asia, Balkans).

• **28th Regime proposal (ESNA):** an optional EU-wide legal framework to simplify cross-border company setup, ESOPs, and procurement access.

• **European Competitiveness Fund (post-2027):** a consolidated instrument to fund critical industries (clean, digital, health, defence/space) across the full innovation lifecycle.

• **ECF (post-2027):** a consolidated instrument to fund critical industries (clean, digital, health, defence/space) across the full innovation lifecycle.

III. Advisory Board's input: implementation approach

Key Themes

a. ESNA's alignment with the EU startup and Scaleup Strategy
b. Europe's critical industries: correlation with talent and entrepreneurial culture
- Skillsets needed to tackle critical technologies
- Entrepreneurial culture: the importance of a mindset shift from both founders' and societal viewpoint

c. Showcasing relevant Initiatives in Europe: skills programmes, startups cases and policies
- Entrepreneurial culture flywheel exercise supporting this Volume's approach

d. Main gaps and potential solutions: from theory to practice

a. ESNA's alignment with the EU Startup and Scaleup Strategy

The long-awaited EU Startup and Scaleup Strategy was published on May 28th, 2025. In the past couple of years, startups and scaleups have been highlighted as crucial actors of the EU's Single Market and Competitiveness. Additionally, startups were formally included in a Commissioner's portfolio (Commissioner Ekaterina Zaharieva) for the first time on December 1st, 2024, as the current mandate started.

With its comprehensive, innovation-friendly approach, the Strategy outlines a series of measures that may be applied both at the EU and national levels to attract and retain startup founders and employees. In addition to setting a timeline that extends until 2027 for a first implementation review, the Strategy identifies five key pillars to foster a startup-friendly ecosystem in Europe. While the topic of entrepreneurial culture is not as explicitly mentioned in the EU Startup and Scaleup Strategy, it is framed as an overarching objective in the document. Talent, however, is clearly showcased as one of the essential concepts of the Strategy.

Figure 15. EU Startup and Scaleup Strategy's five pillars

In this context, ESNA's mission and ongoing work are fully aligned with the Strategy's ambition: Choosing Europe to start and scale a business. Since its creation, ESNA has consistently highlighted measures that enhance talent mobility, strengthen entrepreneurial skills, and reduce barriers to growth across Member States through the eight SNS that act as a cornerstone for a startup friendly-European ecosystem, and are measured through the SNS Report and Scoreboard. These tools assess and monitor national policies on a yearly basis, thereby facilitating national policymakers' measures for innovators and entrepreneurs. Additionally, the Best Practices Catalogue is one of ESNA's flagship projects. It showcases worldwide policies, broken into specific categories (including 'Visas, special schemes or regimes' and 'Entrepreneurial culture or support'), in order to inspire European policymakers to tailor these measures to their local realities.

By building bridges between national ecosystems and the European policy agenda, ESNA acts as a unique connector - ensuring that the voices of the startup ecosystem are reflected in national policies[59]. This alignment reinforces ESNA's role as both a knowledge hub and an action-oriented platform, complementing the Strategy's five pillars with a strong emphasis on culture, talent, and cross-border collaboration.

[59] Note: ESNA's Advisory Board is made up of different actors/profiles, from different nationalities, engaged in the startup ecosystem.

Action areas: EU Startup and Scaleup Strategy

SNS #2 Attraction and retaining talent

- Skills Portability Initiative
- Multipurpose Legal Gateway Offices

SNS #3 Stock options

- Employee stock options
- Eliminate tax obstacles for remote cross-border
- Fair Labour Mobility Package
- EU Visa Strategy
- Multipurpose Legal Gateway Offices
- EU Blue Card Directive
- Encourage Member States to put in place fast-track schemes
- Simplify and reinforce existing EURAXESS services for innovators

Figure 16. Mapping initiatives mentioned in the EU Startup & Scaleup Strategy with ESNA's actions

Zooming in: Talent measures featured in the EU Startup & Scaleup Strategy[60]

- Explore best practices concerning the treatment of **employee stock options for startups, including considering legislative measures to harmonise certain aspects of their treatment.**
- Propose a recommendation **to eliminate tax obstacles for remote cross-border employees for startups and scaleups.**
- Present a **Fair Labour Mobility Package**, including clarification of social security coordination rules in case of cross-border remote work and a Skills Portability Initiative to further facilitate and simplify the recognition of qualifications, including for third-country nationals
- Adopt an **EU Visa Strategy** which will include measures to better attract highly skilled students, researchers, entrepreneurs and trained workers from third countries to come to the EU, for example by making the most of the Students and Researchers Directive and the Blue Card Directive, in particular for startup founders
- Pilot the **Multipurpose Legal Gateway Offices** initiative with a specific focus on ICT skills (Q4 2025). The pilot will serve as a one-stop-shop for information and assistance to highly skilled professionals, students and researchers in the ICT sector, who are interested to work in the EU
- Roll out targeted information activities

[60] European Commission, EU Startup and Scaleup Strategy – Choose Europe to Start and Scale, 28 May 2025, https://commission.europa.eu/news/choose-europe-your-startup-and-scaleup-2025-05-28_en

to promote the EU Blue Card Directive, among highly skilled non-EU workers and employers about the benefits of the EU Blue Card, including the possibility for the EU Blue Card holder and their family members to get easier access to the EU long-term residence status

- **Encourage Member States to put fast-track schemes in place** allowing eligible startup founders to obtain a residence and work permit under simplified and expedited procedures
- **Simplify and reinforce existing EURAXESS services for innovators**, including by offering bespoke support to non-EU talent, with essential information on the respective procedures across the different EU Member States
- Innovation, friendly regulations implementation of the Quality jobs roadmap and the Labour mobility package.

Zooming in: The EU Startup and Scaleup Strategy and ESNA's projects

By analysing these correlations, ESNA aims to align these measures with specific recommendations drawn by our AB Members – the tables below capture this process. The EU Startup and Scaleup Strategy was mapped not only with ESNA's Volumes (as indicated in one of the columns), but also with specific ESNA projects that are already operating to support policymakers, such as ESNA's Best Practices Catalogue.

Entrepreneurial Culture

Topic	Action	Timeline	ESNA Volume (strategic document)	Other ESNA Projects
Fast market uptake and expansion	Lab to Unicorn Initiative:	-	-	-
	European Startup and Scaleup Hubs	2026	Entrepreneurial Culture Volume	-
Support for the best talent in Europe	Entrepreneurial education	-	Entrepreneurial Culture Volume	Best Practice Catalogue
	Blueprint for an academic career development framework		Entrepreneurial Culture Volume & IP and Tech Transfer Volume	-

Entrepreneurial Culture				
Topic	Action	Timeline	ESNA Volume (strategic document)	Other ESNA Projects
Support for the best talent in Europe	Entrepreneurial education		EC Volume	Best Practice Catalogue
	Blueprint for an academic career development framework		EC Volume & IP and Tech Transfer Volume	-
	Employee stock options for startups, including considering legislative measures to harmonise certain aspects of their treatment		Talent Volume	Best Practice Catalogue EU Startup Nations Standard #3 - Stock Options
	Eliminate tax obstacles for remote cross-border employees		Talent Volume	EU Opportunity Hub Best Practice Catalogue
	Fair Labour Mobility Package	2026		
	Skills Portability Initiative	2026		
	EU Visa Strategy	Q4 2025		
	Promote the EU Blue Card Directive			
	Multipurpose Legal Gateway Offices	Q4 2025	Talent Volume	EU Opportunity Hub
	Encourage Member States to put in place fast track scheme		Talent Volume	Best Practice Catalogue EU Startup Nations Standard #2 - Attracting and retaining talent
	Simplify and reinforce existing EURAXESS services for innovators		Talent Volume	-

Note: The indicated timeline was estimated by the EC.

b. Building a strong connection between Europe's critical industries and talent & entrepreneurial culture

For Europe to maintain and strengthen its open strategic autonomy, the region must anchor its talent policies to the development of critical industries. Sovereignty today is not only defined by access to capital and infrastructure, but also by the capacity to mobilise human capital in key sectors. ESNA's SNS Report 2024 highlights some progress in SNS #2 Attracting and Retaining Talent, which denotes national government's commitment in this field. About half of the surveyed countries state to process visa applications within one month, while a lower but significant number of EU Member States have already established some incentives to encourage the return of their citizens who emigrated.

Success breeds success

The US has built a flywheel powerhouse for Regular Tech and Deep Tech startups

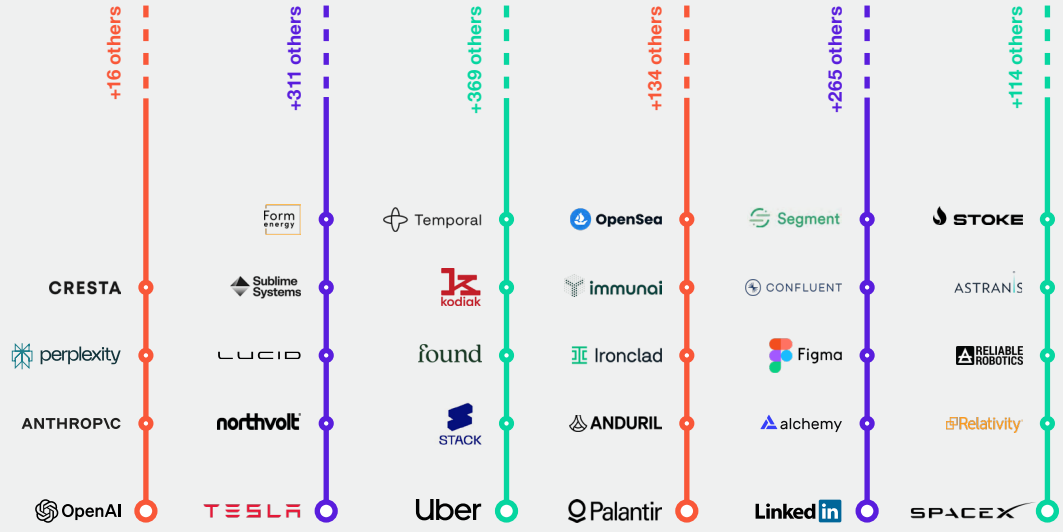


Figure 17. Startups founded by former employees of US scaleups

Source: Dealroom, Lakestar, & Walden Catalyst. (2025, March). The European Deep Tech Report 2025. Dealroom. https://dealroom.co/uploaded/2025/03/2025_Dealroom-Deeptech-Report.pdf

Why time and resources must be allocated to shift the EU's entrepreneurial mindset and bring new talented innovators in

The US have been able to position themselves as a global powerhouse in critical industries and frontier innovation largely thanks to the unique combination of entrepreneurial talent and a cultural acceptance of risk. One of the clearest examples of this dynamic is the wave of startups founded by former employees of America's leading scaleups. As shown in the map, companies such as Anduril, Anthropic, OpenAI, Relativity, and many others emerged as spin-outs or second-generation ventures created by individuals who had previously gained experience at giants like LinkedIn, Palantir, SpaceX, Tesla, and Uber. This virtuous cycle of knowledge transfer, risk-taking, and talent recycling has led to a rapid expansion in tech and deep tech sectors, which in turn has strengthened its position across critical industries.

In Europe, the flywheel of talent and innovation is also in motion, though so far the momentum has come mainly from tech companies, with deep tech accounting for a limited portion of activity.

Scaleups such as Klarna[61] , Spotify, Zalan-

[61] Klarna went public in September 2025, being the largest IPO of the year at this date.

Europe's flywheel is mostly driven by shallow tech companies so far

Figure 18. Number of startups founded by former employees of European scaleups

Source: Dealroom, Lakestar, & Walden Catalyst. (2025, March). The European Deep Tech Report 2025. Dealroom. https://dealroom.co/uploaded/2025/03/2025_Dealroom-Deeptech-Report.pdf

do, and others have generated dozens of new startups from former employees as seen in figure 18, creating a fertile entrepreneurial base across the continent. Yet, few of these ventures are focused on deep tech, highlighting a structural gap compared to the U.S.

As indicated in the European Deep Tech Report 2025[62], only 5% of European spin-outs focus on deep tech. This figure highlights that in spite of the encouraging number of new startups, their areas of expertise may not be the most adequate to face current and future societal challenges. At the same time, Europe now possesses many of the right ingredients to change this trajectory: an increasing VC allocation towards deep tech, the rise of high-profile European deep tech startups (such as BioNTech or Mistral AI), and a growing pool of business angels and early-stage investors willing to back European innovation. This combination sets the stage for Europe to diversify from consumer-facing platforms to critical industries pioneers.

[62] Dealroom, Lakestar, & Walden Catalyst. (2025, March). The European Deep Tech Report 2025. Dealroom. https://dealroom.co/uploaded/2025/03/2025_Dealroom-Deeptech-Report.pdf

ESNA's process explained

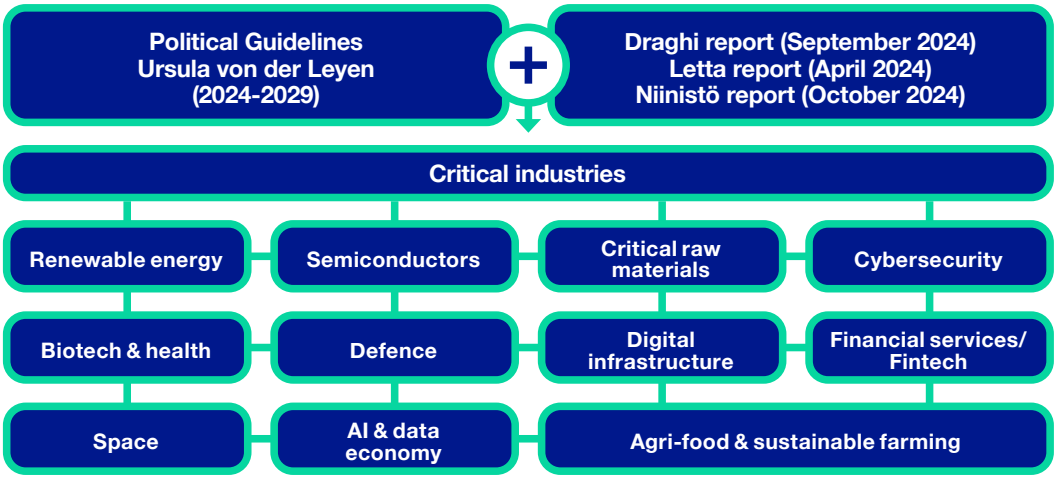
During the process of this work, we identified eleven critical industries - ranging from semiconductors and quantum computing, to batteries, space, health, and defence technologies - that are crucial to ensure Europe's security and competitiveness based on Ursula von der Leyen's Political Guidelines as well as Draghi's, Letta's and Niinistö's reports.

While the concept of entrepreneurial culture is embedded in each of these industries, they rely on highly specialised skills, and without a robust talent pipeline Europe will remain dependent on external markets and vulnerable to global shocks.

In Deep Tech, the flywheel is only starting to spin in Europe

Figure 19. Number of startups founded by former employees of European scaleups

Source: Dealroom, Lakestar, & Walden Catalyst. (2025, March). The European Deep Tech Report 2025. Dealroom. https://dealroom.co/uploaded/2025/03/2025_Dealroom-Deeptech-Report.pdf



Critical Industries	Risk and Resilience Culture	
	Societal mindset shifts	**Founder mindset contribution**
Renewable energy	Long-term resilience, resilience to energy shocks, sustainability orientation	Driving long-term investment in renewable projects despite market volatility; embracing resilience and mission-driven focus
Semiconductors	Innovation under uncertainty, strategic autonomy mindset, global competitiveness	Balancing high R&D risks with persistence; building global partnerships while protecting EU autonomy
Critical raw materials	Resource security awareness, circular economy thinking, supply chain resilience	Innovating in recycling and alternative sourcing; managing uncertainty in supply chains with entrepreneurial agility
Cybersecurity	Preparedness, ethical use of tech, vigilance and rapid adaptation	Rapidly iterating to stay ahead of threats; embedding trust and ethics into product design
Biotech & health	Patient-centric ethics, responsibility in biotech use, trust in science	Bringing patient-first innovations to market; navigating regulation while keeping focus on societal impact
Defence	Risk awareness, strategic foresight, collaborative security mindset	Leading teams with foresight under uncertainty; turning defence challenges into scalable dual-use solutions
Digital infrastructure	Openness to disruption, redundancy planning, cross-border trust	Building redundancy and secure-by-design digital platforms; fostering trust across borders
Financial services/Fintech	Responsible finance culture, transparency, inclusion, risk-taking in capital allocation	Challenging traditional finance models with inclusion and transparency; taking calculated risks in capital innovation
Space	Exploration mindset, tolerance for failure, international collaboration	Pioneering exploration and commercialisation with tolerance for failure; leveraging international alliances
AI & data economy	Agility in adopting AI, ethical responsibility, openness to disruption	Adopting and scaling AI responsibly; pivoting fast while keeping strong ethical principles
Agri-food & sustainable farming	Sustainability mindset, agro-innovation acceptance, stewardship of biodiversity	Transforming agriculture through sustainable innovation; balancing tradition with disruptive solutions

Figure 20. ESNA's analysis of EU critical industries

This input was then paired with Horizon Europe's Pillar II 'Global Challenges and European Industrial Competitiveness' clusters.

Building stronger bridges between critical industries and Europe's talent base

Startups and scaleups are central to this equation as they have the potential to be the engines of innovation in critical industries. Yet, they face severe constraints in accessing the skilled engineers, data scientists, and technical leaders required to scale. Relevant professionals tend to opt for larger companies that are able to offer more competitive salaries and benefits. The scarcity of such talent across Europe has been stressed by ESNA AB members, who see talent shortages as a growth barrier. Building stronger bridges between critical industries and Europe's talent base is, therefore, both an economic necessity and a strategic imperative.

This calls for more ambitious and coordinated efforts at the European level. Member States have pioneered various initiatives - from fast-track visas for tech workers to national reskilling programmes - but fragmented approaches are not keeping up with the scale of the challenge. Europe must learn from global practices, including those curated in ESNA's Best Practices catalogue. This encompasses mobility, education, and incentives not as

Critical Industry: Health
Startup Focus: Startups in health tech/ biotech and medtech need talent in digital health, innovation management, and STEM.

Critical Industry: Culture, creativity & inclusive society
Startup Focus: Creative startups need hybrid skills combining civic engagement, edtech, arts, digital heritage tools and sustainability.

Critical Industry: Civil security for society
Startup Focus: Security startups depend on skilled cybersecurity, telecommunications and AI engineers for surveillance, threat detection or disaster risk management.

Critical Industry: Digital, industry & space
Startup Focus: Digital & deep-tech startups need experts in AI, chips, quantum, IoT, etc.

Critical Industry: Climate, energy & mobility
Startup Focus: Clean-tech and mobility startups face shortages in green and digital skills.

Critical Industry: Food, bioeconomy, natural resources, agriculture & environment
Startup Focus: Agritech and bioeconomy startups need new digital and sustainable farming skills.

isolated measures, but as part of a larger-scale agenda for talent.

Skills foresight, talent dashboards, and sector-specific academies could ensure that curricula are continuously updated in line with frontier technologies. At the same time, targeted instruments such as stock option reforms, cross-border mobility frameworks, and industry-academia partnerships would create an environment where startups in critical sectors can compete globally for talent. The outcome should be clear: Europe not only invests in cutting-edge industries but also secures the people capable of operating them.

Ultimately, the connection between critical industries and talent is about sovereignty. If Europe can cultivate and retain the engineers who design semiconductors, the entrepreneurs who build cybersecurity solutions, and the researchers who pioneer green technologies, it can maintain its autonomy and global relevance. If not, it risks dependency on others for the foundations of its economy and security. Building this connection is, therefore, not only about innovation, but also about Europe's capacity to shape its own future.

Mapping Europe's critical industries and skills correlation

The following image illustrates the direct correlation between critical industries and skills. For Europe to remain competitive and sovereign, supporting the development of specific skill sets is the foundation that enables the creation and scaling of new technologies. Every critical sector, from health and semiconductors to clean energy and agritech, depends on a pipeline of highly specialised professionals. Without these skills, Europe would struggle to develop or retain the technologies that are central to its economic and strategic future, jeopardising its overall competitiveness.

In the ecosystem, startups are the ones that initiate technological transformation due to their structures and ways of working: flexible, faster, and lighter than corporates, capable of pivoting new ideas into global markets. But their agility does not replace the need for specialised talent. On the contrary, these companies depend on highly skilled engineers, data scientists, designers, and regulatory experts to take technologies from early-stage concepts to scaled applications. When startups lack access to these people, innovation stalls, and Europe risks falling behind other regions such as the U.S. and China.

This is why policy support for upskilling, reskilling, and talent attraction is essential. Governments have the ability to shape an environment that makes innovation possible through talents. By investing in targeted upskilling for critical industries, Europe ensures that the human capital exists for startups to challenge global competitors.

The return on this investment is twofold: it strengthens Europe's technological sovereignty and directly enhances competitiveness, as startups generate growth, jobs, and solutions that feed back into the wider economy.

Political Guidelines Ursula von der Leyen (2024-2029)

+

Draghi report (September 2024)
Letta report (April 2024)
Niinistö report (October 2024)

+

Horizon Europe Work Programmes (2026-2027)

Critical Industry: Health
Startup Focus: Startups in health tech/ biotech and medtech need talent in digital health, innovation management, and STEM.

Skills needed: Digital health, biotechnology, data analytics, regulatory compliance, AI for diagnostics, clinical trials

Critical Industry: Culture, creativity & inclusive society
Startup Focus: Creative startups need hybrid skills combining civic engagement, edtech, arts, digital heritage tools and sustainability.

Skills needed: AR/VR, AI for creatives, sustainable design, digital storytelling, cultural entrepreneurship, sociology, anthropology, digital humanities

Critical Industry: Civil security for society
Startup Focus: Security startups depend on skilled cybersecurity, telecommunications and AI engineers for surveillance, threat detection or disaster risk management.

Skills needed: Cybersecurity, AI, defence engineering, crisis tech, ethical hacking, cryptography

Critical Industry: Digital, industry & space
Startup Focus: Digital & deep-tech startups need experts in AI, chips, quantum, IoT, etc.

Skills needed: AI, quantum computing, microelectronics, robotics, software engineering, smart manufacturing, data engineering, IoT

Critical Industry: Climate, energy & mobility
Startup Focus: Clean-tech and mobility startups face shortages in green and digital skills.

Skills needed: Battery tech, renewable energy, EV maintenance, circular economy, green hydrogen, climate tech, smart grids, carbon capture tech

Critical Industry: Food, bioeconomy, natural resources, agriculture & environment
Startup Focus: Agritech and bioeconomy startups need new digital and sustainable farming skills.

Skills needed: Precision agriculture, agri-data, bioengineering, sustainability, agroecology & packaging, environmental monitoring & conservation.

Figure 21. Critical industries' correlation with talent

ESNA analysis

TALENT

The table below includes further insights into the current talent trends in the EU tech landscape. Ranging from generic digital skills to real issues flagged by employers and founders, it strikingly emphasises on current and expected challenges in the region. The challenge of attracting and retaining specialised talent is particularly visible in the deep-tech sector. According to the EIC Scaling Club[63], nearly 70% of EU deep-tech startups face critical difficulties in hiring engineers with the right experience to scale complex ventures. This scarcity not only slows down growth trajectories but also risks pushing companies to relocate or seek talent abroad.

This demonstrates that supporting skills development for critical industries is not an isolated labour policy - it is an economic and strategic necessity. By ensuring that the talent pipeline meets the needs of startups in frontier sectors, policymakers give Europe the ability not just to respond to global challenges, but to set the pace in defining the technologies of the future.

[63] Siota, J., Kowszyk, Y., & Prats, M. J. (2025, April 1). European deep tech scaleups: Leadership and talent development (Scaleup Series). IESE Business School. https://www.iese.edu/media/research/pdfs/78602.pdf

Fact	Context
70% of EU deep-tech startups say they struggle to recruit engineers with experience in scaling	From the EIT Deep Tech Talent Initiative, this statistic highlights the acute talent bottleneck for scaling ventures in frontier technologies.
Potential shortfall of 3.9 million tech workers in the EU by 2027	This projects the gap between supply and demand for tech workers, including in deep tech, digital infrastructure, etc. It underscores how urgent the upskilling/attraction task is.
56% of EU citizens aged 16-74 had at least basic digital skills in 2023: 24 percentage points below the 2030 Digital Decade target	Shows gaps even in basic digital literacy; the skills deficit exists not just in highly specialised fields but across general digital competence, which can be foundational for critical-industry work.
Five years into the “Not Optional” campaign, European late-stage startups’ employee ownership averaged 16%, up from ~12%	Demonstrates improvements in stock option / employee ownership frameworks, but still behind U.S. (~20%) and with wide variation across EU countries. Reflects how regulation & incentive structure affect the attractiveness of startup careers.
Qualified staff / skilled labour is cited by 77% of EU firms as a barrier to investment	From an EIB survey in its Scaleup series, this shows that lack of talent is among the top reasons firms refrain from increasing investment. It connects talent shortages directly to slower innovation/ scaling.

Table 2. Key facts on tech talents in Europe

Sources: Siota, J., Kowszyk, Y., & Prats, M. J. (2025, April 1). European deep tech scaleups: Leadership and talent development (Scaleup Series). IESE Business School. https://www.iese.edu/media/research/pdfs/78602.pdf
McKinsey & Company, Women in tech: The best bet to solve Europe’s talent shortage, January 24, 2023
Eurostat, “Towards Digital Decade targets for Europe”, Statistics Explained, European Commission, data extracted June 2025, ISSN 2443-8219, retrieved from https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Towards_Digital_Decade_targets_for_Europe
Not Optional, “Seven European countries match or beat US for stock option policy,” Not Optional – Latest News, 28 October 2024, retrieved from https://www.notoptional.eu/latest-news/seven-european-countries-match-or-beat-us-for-stock-option-policy.html
EY, Europe Attractiveness Survey 2025, “How can Europe act now to create advantage from adversity?”, 17 June 2025, retrieved from https://www.ey.com/en_gl/foreign-direct-investment-surveys/ey-europe-attractiveness-survey

Political Guidelines (Missions) and correlation with the Startup Ecosystem

The examples listed in the table below illustrate how political missions translate directly into startup opportunities and skillsets needs across Europe's critical industries. It highlights their diversity as well as the depth of competences necessary for a flourishing economy in the region.

In **renewable energy**, initiatives related to the Green Deal not only accelerate decarbonisation but also open markets for startups developing battery technologies, smart grids, and energy storage solutions. These ventures depend on engineers with green and digital skills, pairing industrial policy with specialised talent development.

Metrics: In 2024, approximately €15 billion flowed into European deep tech startups - many of which are in climate & energy sectors - showing that despite overall VC funding declines, climate-tech/deep-tech talent remains essential[64].

[64] Lakestar. (2025). European deeptech report 2025. Lakestar. https://lakestar.com/news/2025-european-deeptech-report

Political Guidelines 2024–2029 (Missions)	Why / how it relates to the startup ecosystem
EU Critical Industry: Renewable Energy	
A.2. Build a Clean Industrial Deal to decarbonise and bring down energy prices	Supports the decarbonisation agenda; aligns with Fit for 55 and REPowerEU (55% by 2030, and REPowerEU, which aims to reduce dependency on fossil fuels and accelerate the green energy transition).
EU Critical Industry: Semiconductors	
A.5. Invest massively in our sustainable competitiveness	Key to EU's tech sovereignty and reducing dependency on global supplier (crucial for strengthening Europe's ability to develop and control its own critical technologies, reducing reliance on non-EU countries for key supplies like semiconductors, batteries, or digital infrastructure - thereby enhancing Europe's strategic autonomy.)
EU Critical Industry: Critical Raw Materials	
A.5. Invest massively in our sustainable competitiveness	Secures strategic autonomy and supply chain resilience through international partnerships (EU strengthens its independence and stability by building reliable global partnerships - diversifying supply sources, reducing risks of disruptions, and ensuring access to critical materials and technologies without overdependence on any single country or region).
EU Critical Industry: Cybersecurity	
A.5. Invest massively in our sustainable competitiveness	Essential for digital resilience and countering hybrid threats (it helps the EU protect its digital infrastructure from cyberattacks, misinformation, and other hybrid threats (which combine cyber, economic, and political tactics), ensuring secure, stable, and trustworthy digital systems across Europe).

EU Critical Industry: Biotech & Health	
A.3. Put research and innovation at the heart of our economy	Enables access to innovation in healthcare and pandemic preparedness (supports faster development and deployment of new health technologies, making Europe better equipped to respond to health crises, improve medical treatments, and strengthen preparedness for future pandemics).
EU Critical Industry: Defence	
A.5. Invest massively in our sustainable competitiveness	Accelerates joint procurement and EU defence autonomy (speeds up collective buying of defence equipment among EU countries, reducing costs, improving coordination, and strengthening Europe's ability to defend itself without relying heavily on non-EU suppliers).
EU Critical Industry: Space	
A.5. Invest massively in our sustainable competitiveness	Space assets critical for data, navigation, climate, defence, and competitiveness (satellites and other space technologies are essential for providing data (like Earth observation), GPS navigation, climate monitoring, defence security, and boosting Europe's economic and technological competitiveness globally).
EU Critical Industry: AI & Data Economy	
A.3. Put research and innovation at the heart of our economy	Data governance and skills investment under Digital Europe is supported by translating research results into novel technologies. By training and preparing workers for the AI and data transition, Europe enhances its competitiveness.
EU Critical Industry: Agri-food & Sustainable Farming	
A.2. Build a Clean Industrial Deal to decarbonise and bring down energy prices	Supports food sovereignty, nature restoration, and farmers' livelihoods (ensures Europe can sustainably produce its own food (food sovereignty), restores and protects natural ecosystems (nature restoration), and secures fair incomes and long-term viability for farmers (farmers' livelihoods), balancing environmental and economic goals).
EU Critical Industry: Digital Infrastructure	
A.4. Boost productivity with digital tech diffusion	Backbone of EU's digital transformation, cloud sovereignty, and innovation ecosystems (provides the core infrastructure and technologies needed for Europe's digital transition - ensuring secure, EU-controlled cloud services (cloud sovereignty) and fostering strong local innovation ecosystems that drive growth and competitiveness).
EU Critical Industry: Financial Services / Fintech	
A.1. Make business easier and deepen our Single Market	Promotes capital market integration, financial inclusion, and digital euro rollout (helps unify Europe's financial markets (capital market integration), ensures more people and businesses can access financial services (financial inclusion), and supports the development and adoption of a digital euro to modernise payments and strengthen EU monetary sovereignty).

Table 3. Political guidelines' missions and their relation to the startup ecosystem

Semiconductors are another relevant case: Europe's ambition to reduce reliance on global suppliers requires startups working on chips, quantum technologies, and advanced manufacturing. Yet their ability to scale depends on the availability of highly trained system engineers and researchers. Policy support should prioritise education and mobility schemes towards this particular field.

Metrics: According to Dealroom's European Deep Tech Report, European deep tech startups raised $18B in 2022 (almost double the amount raised in 2020), indicating strong momentum and signalling how demand for semiconductor and adjacent skills is rising[65].

Cybersecurity is an excellent example of the link between skills and sovereignty. Protecting Europe's digital infrastructure requires startups innovating in AI-driven security, threat detection, and crisis technologies. These companies act as the "first responders" to global threats, but only if Europe can retain ethical hackers, cybersecurity engineers, and AI specialists.

Metrics: The State of European Tech report shows that the European tech workforce has scaled to about 3.5 million people, having added nearly 3 million jobs over the past decade, growing at approximately 24% compound annual growth rate - which signals that demand for tech (including cybersecurity) talent is surging[66].

Biotech and health further highlight the sovereignty dimension. Startups in this field accelerate the development of vaccines, diagnostics, and medical technologies. Their competitiveness depends on talent trained in biotech, regulatory frameworks, and digital health. Public programmes that expand these skills make the difference between Europe leading or lagging in health innovation.

Metrics: Europe's deep tech funding including biotech got €15 billion in 2024[67] - even as overall tech VC funding declined sharply. That shows strong investor confidence in life sciences, medtech, and biotech startups, but also implies a large demand for biotech scientists, regulatory experts, clinical trial managers.

Finally, in **space technologies**, startups building satellites, navigation systems, and climate monitoring solutions embody Europe's global competitiveness ambitions. Yet without access to specialised aerospace engineers and data scientists, Europe cannot fully benefit from these investments. Linking industrial missions with targeted skills pipelines is therefore critical.

Metrics: While the region remains strong in Earth observation capabilities, its global market share is projected to fall behind.

[65] Dealroom. (2025). Deep Tech Europe. Dealroom. https://dealroom.co/guides/deep-tech-europe

[66] Atomico. (2024). State of European Tech 2024 [Executive summary]. Atomico. https://www.stateofeuropeantech.com/chapters/executive-summary

[67] Lakestar. (2025). European deeptech report 2025. Lakestar. https://lakestar.com/news/2025-european-deeptech-report

By 2033, Europe is expected to account for just 22 % of global Earth observation market revenues, compared to 44 % for the US, highlighting the growing competitiveness gap[68].

European skills programmes

Developing Europe's critical industries requires more than investment in infrastructure or capital flows; it depends fundamentally on the skills base that sustains them. Without targeted programmes to build, upgrade, and attract specialised talent, Europe risks losing its ability to develop strategic technologies internally. Public programmes are therefore not an isolated education policy, but a cornerstone of Europe's competitiveness and sovereignty. They create the frameworks through which skills can be developed at scale, aligned with industry demand, and connected directly to startup and scaleup ecosystems.

The table below highlights how current national programmes in Europe are linked to specific critical industries, outlining the ways in which they foster the skills needed for frontier technologies. Whether it is the Clean Industrial Deal for renewable energy, investments in semiconductors, or the promotion of digital infrastructures, each initiative demonstrates how skill development underpins industrial strength. These programmes serve as bridges between political guidelines, industrial missions, and the talent pipelines that startups and scaleups require to grow.

For policymakers, the lesson is clear: every critical industry carries with it a set of specialised skills that cannot be left to chance. Coordinated public programmes ensure that Europe not only anticipates but actively shapes the skills agenda, creating an environment where startups can operate as first movers in new technologies. By connecting industry priorities to skill development, these programmes make it possible for Europe's innovators to deliver solutions that reinforce both economic growth and strategic autonomy.

[68] NovaSpace, Earth Observation Data & Services Market, 17th Edition, 2024

Programme Name	Country / Region	Sector	Target Groups	Format
Green Tech Skillnet	Ireland	Green Tech	SMEs, professionals	Hybrid
European Chips Skills Academy	EU-wide (led by Belgium)	Semiconductors & Microelectronics	Students, professionals	Online/In person
EIT Raw Materials Academy	EU-wide (HQ in Germany)	Raw Materials, Circular Economy	Students, early-career professionals	Blended
EU Cybersecurity Skills Academy	EU-wide	Cybersecurity	All skill levels (entry to advanced)	Online, modular
EU EIT Health community programmes	EU-wide (HQ in Germany)	Health & Life Sciences	Health professionals, startups, students	Various (bootcamps, incubators, MOOCs)
ASSETS+	EU-wide (led by Spain)	Defence, AI, Cybersecurity, Robotics	Students, defence professionals	Courses, mobility, co-designed curricula
ESA Academy	Belgium (EU-wide)	Space, Engineering	University students (STEM)	In-person
I-Restart	Italy	Advanced Manufacturing, Industry 4.0	Workers, SMEs	Online and blended

Table 4. National talent initiatives and affiliated critical industries

This table was designed to illustrate how Europe is already mobilising skills programmes across critical industries, and why a structured, comparative approach is essential for policy. By categorising each programme under the following characteristics: *Country/Region, Sector, Target Groups, Format, Funding Source, Lead Organisation,* and *Description*, we highlight the diverse but fragmented landscape of upskilling initiatives. The aim is to show policymakers at a glance who these programmes serve, what industries they support, how they are financed, and which institutions lead them.

c. Main gaps and potential solutions

Despite significant progress in aligning Europe's innovation agenda with its critical industries, persistent gaps remain that risk slowing down the continent's capacity to compete globally. These gaps emerge not only in the availability of technical skills and funding instruments, but also in the broader cultural and structural conditions, such as the ability to take risks, attract global talent, and scale solutions across fragmented markets. The previous exercises have shown how the U.S. has leveraged its talent flywheel to spin out deep tech ventures, while Europe is still catching up with a generic tech dominated pipeline.

At the same time, mapping existing pro-

Funding Source	Lead Organisation	Description
National	Skillnet Ireland	A national upskilling initiative focused on green technologies to support professionals and SMEs in the transition to a sustainable economy
Chips Act	SEMI Europe, IMEC	Flagship initiative under the EU Chips Act to address Europe's chip talent shortage.
Horizon Europe via EIT	EIT RawMaterials	Offers education programmes to build skills in sustainable mining, materials science, and recycling.
Digital Europe Programme	DG CONNECT, ENISA	Coordinates EU wide actions to close the cybersecurity talent gap.
Horizon Europe via EIT	EIT Health	Upskilling and innovation-focused programmes in medtech, biotech, and digital health.
Erasmus+	Universidad Politécnica de Madrid	Erasmus+ alliance to develop new skills in key technologies for defence.
European Space Agency (ESA)	ESA	Provides university students with training, practical projects, and access to ESA experts to foster careers in the space sector.
EU Recovery and Resilience Facility (RRF)	Italy's national training bodies	National programme co-funded by the EU to upskill/reskill workers in digital manufacturing, robotics, and smart production.

grammes across sectors reveals both duplication and blind spots, underscoring the need for more coherence and targeted interventions. In this section, we explore the main gaps across skills, talent, and mindset, and propose concrete solutions - building on ESNA's analysis of critical industries, recent policy reports (Draghi, Letta, Niinistö), and Horizon Europe priorities - to guide Europe's transition towards a more resilient and competitive startup and scaleup ecosystem.

The table below includes examples of EU-based companies and national programmes currently in place that directly relate to the critical industries.

Draghi's report: The board range of skills gaps and how they relate to the startup and scaleup ecosystem

Mario Draghi's report[69] identifies five key skill types that must be upgraded to meet the requirements of Europe's current economic system:

- **Digital skills:** beyond strictly specialised fields, digital literacy ensures greater accessibility, while technological tools improve productivity.
- **Green skills:** green technologies are at

[69] Mario Draghi, The Future of European Competitiveness: A Competitiveness Strategy for Europe, 9 September 2024, European Commission, "Draghi Report" (Part A & B), https://commission.europa.eu/topics/strengthening-european-competitiveness/eu-competitiveness-looking-ahead_en

Critical Industries	EU case companies (startups or big players)	Upskilling programmes under this industry
Renewable Energy	Aquila Capital (Germany); ESB (Ireland); Newcleo (France/Italy); Marvel Fusion (Germany); Orsted (Denmark); Sunfire (Germany); Vattenfall AB (Sweden); Vestas (Denmark)	Green Tech Skillnet (Ireland)
Semiconductors	Axelera AI (Netherlands); SiPearl (France)	European Chips Skills Academy
Critical Raw Materials	Aurubis (Germany); Umicore (Belgium)	EIT Raw Materials Academy
Cybersecurity	Sekoia.io (France)	EU Cybersecurity Skills Academy
Biotech & Health	BioNTech (Germany); Cradle (Netherlands); CureVac (Germany); Doctolib (France)	EU EIT Health community programmes
Defence	Airbus (France, Spain and Germany); ARX Robotics (Germany); Helsing (Germany); Leonardo (Italy); STARK defence (Germany); Tekever (Portugal)	ASSETs+ (Germany, Denmark, France, Belgium, Italy, Poland, Spain and Sweden)
Space	ArianeGroup (France);D-Orbit (Italy); ICEYE (Finland); Isar Aerospace (Germany); Thales Group (France); The Exploration Company (France/Germany)	ESA Academy
AI & Data Economy	DeepL (Germany); Mistral (France); Poolside AI (France); SAP (Germany); Scaleway (France)	GenAI4EU flagship initiative
Agri-food & Sustainable Farming	Dobra Kaloria (Poland); Foodsi (Poland); Rebread (Poland); Revo Foods (Austria)	I-Restart
Digital Infrastructure	DE-CIX (Germany); OVHcloud (France)	Connecting Europe Facility Digital
Financial Services / Fintech	Adyen (The Netherlands); Bitpanda (Austria); Klarna (Sweden); N26 (Germany)	Fintech Investor Network and Ecosystem

Table 5. EU startups, programmes and critical industries

the heart of the European green transition that can eventually secure sustainable development of the continent.

- **Specialist skills:** STEM is critical in fostering the European innovation ecosystem. These 'hard' skills typically evolve rapidly.
- **Transversal skills:** also called 'soft skills' in contrast with specialist skills, they tend not to be included in traditional curricula but rather complement technical skills.
- **Managerial skills:** in a society where machines are ubiquitous, adequate management is crucial to adapt and prosper. However, these skills are often underestimated.

As startups are small entities, it is all the more challenging for them to cover all these five skills. Specialist skills – which can be paired with digital or green skills - are often at the foundation of the company, which then builds up on to transversal and managerial skills. While no hierarchy of skills exist, founders need them all as they themselves do it all in early stages.

Talent

The following actions where developed considering the wide array of specificities that make startups unique places to create, and to work at. From acknowledging Europe's diverse landscape to offering concrete steps for European startups workers and founders to thrive it all comes down to skills, talent attraction, retention, mobility and providing a dedicated, fitting environment.

Action #1 Reskilling and upskilling

1. Building new opportunities for specific target groups
2. Assessing which skills are needed in Europe today
3. Setting up a framework for a freelancer economy

Arguments for reskilling and upskilling programmes

- **Economic resilience:** Europe's competitiveness depends on having a workforce able to adapt to technological disruption (AI, green tech, deep tech, etc.). Without reskilling, industries risk labour shortages and declining productivity.
- **Talent scarcity:** The EU Startup & Scaleup Strategy identifies talent as one of the critical bottlenecks for scaling innovative companies. Addressing skill gaps directly supports growth.
- **Inclusion:** Reskilling initiatives provide pathways for underrepresented groups to enter innovation-driven sectors.
- **Sovereignty & strategic autonomy:** Critical industries cannot only rely on imported skills. Developing homegrown talent is a pillar of EU sovereignty.
- **Sustainability of ecosystems:** Upskilling keeps existing founders, employees, and freelancers relevant, reducing brain drain and fostering long-term participation in Europe's innovation economy.
- **Bridges policy with practice:** While the EU sets frameworks (Digital education plan, European skills agenda), this Volume can show how concrete actions translate into impact.
- **Supports entrepreneurial culture:** Startups require fast learning and adaptability. Highlighting reskilling as an entrepreneurial mindset, not only a policy tool, connects talent development with innovation culture.
- **Evidence of urgency:** Europe already lags behind the US and China in frontier tech. Without accelerated reskilling, European startups cannot compete globally.
- **Systemic impact:** Upskilling affects both the supply side (workers, entrepreneurs) and the demand side (startups needing talent), creating a holistic effect across the ecosystem.

Concrete actions to support reskilling and upskilling in Europe

1. Building new opportunities for specific target groups

How this helps:

- Design programmes tailored for under-represented groups.
- Incentivise startup accelerators and corporates to open bridge programmes where target groups can enter innovation jobs through shorter, practical training.
- Supports inclusion while expanding the available talent pool, addressing diversity gaps highlighted in the Strategy.

2. Assessing which skills are needed in Europe today

How this helps:

- Use foresight and labour market intelligence (e.g., ESCO[70], CEDEFOP, EIB, national foresight agencies) to map the real-time demand for AI engineers, cybersecurity experts, green tech specialists, etc.
- Create a shared EU dashboard of "critical skills for scaling startups" to guide national reskilling initiatives.
- Ensures training investments are aligned with actual ecosystem needs, avoiding mismatches between education outputs and startup demand.

[70] ESCO (European Skills, Competences, Qualifications and Occupations) is the European multilingual classification of Skills, Competences and Occupations. ESCO works as a dictionary, describing, identifying and classifying professional occupations and skills relevant for the EU labour market and education and training.

3. Setting up a framework for a freelancer economy

How this helps:

- Recognises that a growing share of Europe's talent works as independent professionals supporting startups and SMEs.
- Establish EU-wide portable rights (social security, pensions, benefits) to make freelancing a secure career path.
- Build standardised contracts and digital platforms so startups can easily onboard freelance experts across borders.
- This flexible talent pool helps startups scale faster, while workers continuously upskill through project-based learning.

Action #2 Talent attraction

1. Integration and talent attraction for EU candidate countries
2. Accelerating mobility
3. Facilitating access to grants

Why talent attraction

- **Closing the talent gap:** Europe faces a structural shortage of high-skilled workers in AI, biotech, deep tech, green and industrial innovation. Attracting global talent is a faster lever than building skills alone.
- **Boosting innovation ecosystems:** International founders and researchers bring new knowledge, networks, and market access, making ecosystems more com-

petitive, as seen with the Choose Europe initiative.

- **Demographic challenge:** With an ageing population, Europe must attract young and entrepreneurial minds to sustain growth.
- **Strategic autonomy:** Talent is as critical as capital and infrastructure. Attracting skilled individuals reduces dependency on other global hubs.
- **Cultural and economic diversity:** International talent enriches ecosystems with new perspectives, enhancing creativity and entrepreneurial culture.

Arguments for talent attraction

- **Direct connection with the EU Startup & Scaleup Strategy:** Talent attraction is a defined pillar of the Strategy (e.g., EU Talent Pool, Talent Booster Mechanism).
- **Complements reskilling and upskilling:** Attraction adds external inflow, while reskilling develops the internal base. Together, they form a holistic approach to Europe's talent challenge.
- **Urgency of action:** Some countries are competing aggressively with streamlined visas and startup-friendly incentives. Europe risks losing the global race if it does not act as a sole entity by uniting Member States.
- **Relevance for startups:** Many scaling startups highlight hiring global talent as their #1 bottleneck, especially in technical and leadership roles[71].
- **Supports enlargement and cohesion:** Including candidate countries creates a more integrated talent market and aligns with EU's political enlargement agenda.

Concrete actions to support talent attraction in Europe

1. Integration and talent attraction for EU candidate countries

How this helps:

- Create *pre-accession talent pathways* so skilled workers and entrepreneurs from candidate countries can integrate into EU labour markets before full accession.
- Align higher education and vocational training standards with EU frameworks (e.g., European Qualifications Framework (EQF)[72], ESCO) to make talent recognition seamless.
- Benefits: expands Europe's talent pool, accelerates integration of neighbouring ecosystems, and reduces brain drain by offering mobility opportunities while maintaining ties to home countries.

[71] Siota, J., Kowszyk, Y., & Prats, M. J. (2025, April 1). European deep tech scaleups: Leadership and talent development (Scaleup Series). IESE Business School. https://www.iese.edu/media/research/pdfs/78602.pdf

[72] The EQF is an 8-level, learning outcomes-based framework for all types of qualifications that serves as a translation tool between different national qualifications frameworks. This framework helps improve transparency, comparability and portability of people's qualifications and makes it possible to compare qualifications from different countries and institutions.

2. Accelerating mobility

How this helps:

- Streamline visa and residence permit processes (e.g., expand the EU Blue Card, Startup Visas, Talent Visas) to cut waiting times and bureaucracy.
- Promote *intra-EU mobility*: make recognition of skills and qualifications automatic across Member States, reducing friction for cross-border employment.
- Benefits: startups can hire faster from a European-wide pool, and highly skilled workers are more likely to choose Europe over competing destinations.

3. Facilitating access to grants

How this helps:

- Open EU-level research and innovation grants (e.g., Horizon Europe, EIC) to non-EU talent working in EU startups and universities, ensuring they are not excluded due to nationality.
- Create micro-grants for relocation and initial integration costs (language courses, housing, childcare), especially for founders and researchers.
- Benefits: lowers barriers for global talent to join EU innovation ecosystems, increasing Europe's attractiveness and retention capacity.

Action #3 Talent retention and re-attraction

1. Compensation and contractual conditions

2. Academia & talent retention

3. Building an attractive career vision for graduates

Why talent retention and re-attraction

1. Compensation and contractual conditions

Retention:

- Competitive salaries and clear career pathways prevent skilled workers from seeking opportunities abroad.
- Attractive ESOPs, tax incentives, and transparent contracts keep entrepreneurs and employees anchored in Europe.

Re-attraction:

- Competitive packages can lure back European talent who left for better pay elsewhere.
- Recognition of international experience in contracts (seniority, flexible conditions) makes Europe a viable return option.

2. Academia & talent retention

Retention:

- Strong academic-industry collaboration keeps top researchers engaged in European ecosystems instead of migrating.
- Investment in PhDs, postdocs, and research infrastructure avoids "brain drain".

Re-attraction:

- Return programmes (e.g., EU fellow-

ships, ERC grants) encourage researchers abroad to bring their labs, patents, and networks back.

• Reintegrating diaspora academics strengthens Europe's role in global research leadership.

3. Building an attractive career vision for graduates across Europe

Retention:

• Clear pan-European mobility and career pathways show graduates they can grow without leaving Europe.

• Visibility of startup and scaleup opportunities makes entrepreneurship a respected and viable career.

Re-attraction:

• Returnees serve as role models, showing that careers can be global but still return home.

• Offering "Europe as a career hub" repositions the continent as a destination of choice for ambitious professionals.

Entrepreneurial culture

Entrepreneurial culture flywheel

Fostering a thriving entrepreneurial culture is a continuous process that requires agility. The Entrepreneurial Culture Flywheel in the next page is a framework that positions entrepreneurial culture as the connective tissue that ties talent, investment, red tape, and technology transfer together. By adopting a comprehensive approach, it follows a specific flow applied to a complex startup landscape. This is a reflexion tool that supports the development of the suggestions included in this Volume.

Concrete actions to support entrepreneurial culture in Europe

1. Leveraging entrepreneurship through positive role models

How this helps:

• Promote visibility of successful European founders through EU campaigns, awards, and media partnerships.

• Showcase stories not just of unicorns, but of resilient journeys - including pivots and failures - to normalise risk-taking.

Benefits: inspires the next generation of founders, reduces fear of failure, and creates a shared European narrative of entrepreneurial success.

2. Scaling and upgrading entrepreneurial education

Entrepreneurial Culture Flywheel				
		Beliefs	**Proof**	**Enablement & Skills**
Components		**Social Norms & Risk Appetite**	**Role Models & Visibility**	**Entrepreneurial Skills Trust & Fair Competition Founding Intent & Pipeline**
Purpose		Destigmatise failure and build a risk-tolerant mindset that encourages individuals to consider entrepreneurship.	Offer credible, relatable success-and-failure stories that make the entrepreneurial path believable.	Provide the skills, clear rules, and regulatory certainty that turn latent talent into confident founders.
Rationale		Risk-averse cultures stifle entrepreneurship; destigmatising failure is essential to unlock intent.	Stories expand "possible selves"; visible successes and graceful failures normalise entrepreneurship.	Skills are vital for venture success. Measures must convert latent talent to founders; trust & predictable regulation lower perceived risk and cost of capital.
Sources / References		Startup Nation; GEM fear-of-failure data; OECD "Culture & Entrepreneurship"	Zero to One; Feld's Startup Communities	The Lean Startup; GEM intent-vs-activity gap; EU Better Regulation reports; EU competition-policy white papers.
Implications for Other Volumes (Examples / Food for Thought)	Talent	More graduates and mid-career experts see founding as socially acceptable and personally worthwhile.	Inspiring founder stories pull students and professionals into startup career paths.	Upskilling programmes + regulatory clarity convert latent talent to founders; fair competition convinces skilled hires to join young ventures.
	Investments	Increased angel activity as risk tolerance rises.	High-profile exits and transparent success stories attract VCs, LPs, and corporate venture arms.	Regulatory certainty and fair competition reduce downside risk, unlocking earlier and larger cheques; financially literate founders present investable plans.
	Regulatory Barriers	Public opinion supports simplification and "second-chance" insolvency norms.	Media focus on smooth incorporations and quick licensing highlights best-practice jurisdictions.	Predictable, lean rules reduce compliance burden, encouraging more company creations; founders can budget regulatory costs upfront.
	Tech Transfer & IP	Academics feel legitimised to commercialise research and receive societal recognition.	Celebrated spin-outs showcase the viability of academic entrepreneurship.	Clear IP policies, voucher-based R&D funding, and tenure credit for commercial impact move researchers into founder roles.
Mapping of Suggested Measures	ESNA	Promote a risk-culture mindset	-	Address lack of financial literacy
	EU Startup Strategy	-	-	Entrepreneurial education- Blueprint for academic career development
	Advisory Board	-	-	Educational programmes at schools- Incentivise commercialisation

Figure 22. Entrepreneurial Culture Flywheel by Sabrina Gülck, ESNA Advisory Board Member

Note: This Flywheel is shared with the intent to demonstrate the process carried out with our Advisory Board Members.

	Key idea: Entrepreneurial culture is the connective tissue it turns Talent into founders, makes Investment bolder, pushes for Red Tape reduction, and accelerates IP & Tech Transfer.	
	Support	**Reinforcement**
	Community & Peer Networks **Digital & Physical Infrastructure**	**Cultural Infrastructure & Narratives**
	Mobilise all ecosystem players—government (swift procedures & smart procurement), academia, corporates, & enablers—to supply resources, networks, markets, and first-customer opportunities.	Recycle success: serial founders, alumni employees, and high-profile exits reinvest capital and know-how while narratives broadcast achievements to restart the cycle.
	Ecosystem performance hinges on coordinated support from authorities, academia, corporates, and incubators; shared resources cut burn and speed learning.	Founder recycling and alumni spin-outs are proven flywheel effects; they inject capital, mentorship, and experienced talent into the next founder cohort.
	Brad Feld (give-first networks); Lerner on spill-overs; OECD "Public Procurement for Innovation"	SXSW & Austin cases; Israel Startup Week; Kauffman Foundation on founder recycling. Websummit (Ireland and Portugal), Latitude59 (Estonia), TechBBQ (Denmark).
	Peer networks speed hiring; universities & corporates open labs and testbeds, giving talent practical playgrounds.	Alumni of successful startups launch or join new ventures, boosting talent circulation; returning diaspora bring advanced skills home.
	Shared labs/cloud credits and government procurement lower capital intensity, lengthening runway and making deals more attractive.	Serial founders and early employees become angel investors; flagship events create high-density matchmaking moments.
	Authorities deliver one-stop digital services; community feedback loops flag bureaucratic pain points quickly.	Success narratives give policymakers cover to push further deregulation; founder-led advocacy coalitions emerge.
	University TTOs, corporate labs, and maker spaces streamline licensing and prototyping; public procurement buys early deep-tech solutions.	Exit successes fund campus accelerators; ex-employees seed new deep-tech startups, reinforcing the transfer loop.
	Facilitate collaboration between startups, corporates and authorities	-
	European startup and scaleup hubs	-
	Connect capital & mentors- Access to databases	Youth entrepreneurship weeks

How this helps:

- Integrate entrepreneurial skills (risk-taking, pitching, leadership, digital tools) into school, university, and vocational curricula.
- Scale EU-wide initiatives such as EIT Jumpstarter[73] or Erasmus for Young Entrepreneurs to reach more regions and age groups.
- Partner with accelerators and corporates to provide real-world entrepreneurial experiences for students and early-career professionals.

Benefits: equips future talent with entrepreneurial thinking, making startups a mainstream and prestigious career choice.

3. Strengthening communities, peer-networks, and knowledge transfer

How this helps:

- Support the creation and scaling of entrepreneurial hubs and networks that connect founders, mentors, and investors across Europe.
- Encourage cross-border peer-learning programmes where startups can learn from ecosystems more advanced in specific sectors.
- Fund community-building initiatives in underserved regions to reduce the concentration of opportunities in a few capitals.

Benefits: fosters trust, peer support, and collaboration, which are at the heart of resilient entrepreneurial cultures.

4. Measuring Europe's entrepreneurial culture (creating an EU monitor)

How this helps:

- Develop an EU-wide monitor to track entrepreneurial attitudes (fear of failure, willingness to start a business, social perception of entrepreneurship).
- Use this data to inform policies, target interventions, and benchmark progress against global competitors.
- Partner with organisations such as the Global Entrepreneurship Monitor and private data providers to create a robust measurement framework.

Benefits: makes entrepreneurial culture a measurable policy area, allowing policymakers to track improvements and identify gaps.

[73] The Institute of Innovation & Technology (EIT) Jumpstarter offers a 7-month pre-acceleration programme for early-stage innovators from over 22 countries.

IV. Mapping policy at a national level for the actions

Key Themes

- National policies for each action
- Countries' examples and comparisons
- Best practices and expected impact on the startup ecosystem

This chapter focuses on both concepts of talent and entrepreneurial culture, with each topic broken down into specific components that are particularly relevant for European startups and entrepreneurs. To do so, some specific studies are highlighted to provide context on the topic. However, the main focus on this part of the Volume is to highlight national policies and provide a proper guideline of some real cases and example that Europe has already in place.

The invitation for the reader is to consider that Europe is moving forward in terms of policies regarding talent and entrepreneurial culture. However, it is not enough. In this case, we treat policy as a path, an initial step to support the development of the startup and scaleup ecosystem.

The list of practices mentioned in this volume represent some examples provided either by ESNA desk research, followed by ESNA AB inputs and recommendations. In terms of geographies, we have divided the practices of Europe and outside Europe as a way to portray the current state of the art of each topic.

Context to acknowledge

As previously highlighted with Hofstede's research on uncertainty avoidance, some European countries have a higher tolerance for uncertainty, their inhabitants are therefore more prone to take risks – a highly relevant factor for prospective entrepreneurs. The Global Entrepreneurship Monitor (GEM) notably highlights disparities within the continent with the graph below. The Total early-stage Entrepreneurial Activity (TEA) differs greatly between EU countries, going from 2% in Poland to Latvia at 15%.

The way Member States approach talent also reflects Europe's diversity. While some countries focus their efforts on attracting highly-skilled workers beyond their borders, others would rather retain national professionals whose education and training was often funded locally. In 2023, the European Committee of the Regions and the EC identified 82 regions in which talent development and therefore brain drain was an issue[74]. As concerns may vary across countries, a broad array of solutions has been developed.

[74] https://ec.europa.eu/newsroom/eucor/items/845682/en

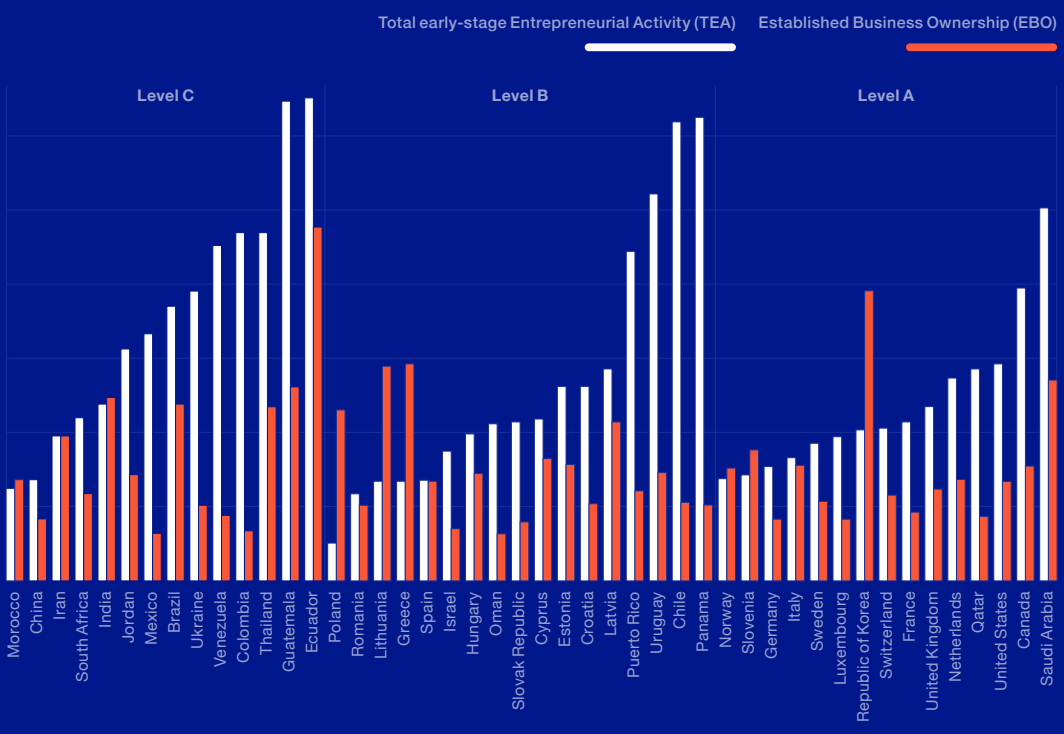


Figure 23. Total early-stage Entrepreneurial Activity (TEA) and Established Business Ownership (EBO) (both % adults).
Source: GEM Adult Population Survey 2023

Talent - reskilling and upskilling

Targeted upskilling and reskilling actions are essential in order to strengthen Europe's talent pool and foster inclusive competitiveness. This includes building new opportunities for specific target groups, by notably offering tailored training and access to innovation ecosystems. At the same time, it is crucial to assess which skills are needed in Europe today, particularly in strategic sectors such as AI, cybersecurity, and clean tech, and ensuring training programmes are aligned with current and future labour market demands. Finally, setting up a framework for a freelancer economy supports flexible forms of work by providing legal clarity, social protection, and access to lifelong learning, enabling independent workers to thrive in a dynamic digital economy.

ESNA's AB Members have identified three subtopics within the framework of Reskilling and upskilling to elaborate upon:

1. Building new opportunities for specific target groups

2. Assess which skills are needed in Europe today

3. Setting up a framework for a freelancer economy

Key policies carried out in Europe to support this action

The following table presents various national practices from European countries aimed at strengthening workforce skills and employability. In the ESNA AB working groups, one of the constant discussions had to do with the need to develop a new working force that is coherent with the new trends, technologies and industries.

Therefore, this set of best practices are listed as existing policies or initiatives that support that aim. For examples, this practice outlines initiatives that include competence assessment systems, vocational training vouchers, job placement schemes, personal training accounts, and skills development programmes across different Member States. These initiatives are highly relevant as they equip individuals with future-oriented skills, bridging gaps between labour market needs and available talent.

Furthermore, as in recent reports published in the past two years in Europe, the concept and acknowledgement of reskilling and upskilling has become of importance for the construction of a competitive market that can have the talent that it needs, to be ready or prepare for new challenges.

Therefore, many of these policies also foster continuous reskilling and upskilling, ensuring workforce adaptability, employability, and support for innovation-driven startups. For example, the CEDEFOP[75] is a valuable resource as its Matching skills online tool gathers instruments aimed at fostering labour and skill development policies. The measures below include Croatia's recent VET voucher system focused on digital and green skills, France's portable lifelong learning accounts, and Bulgaria's data-driven competence mapping. Malta favours concrete training and employer engagement, and Cyprus' example ensures fair compensation for trainees.

[75] See box below.

Bulgaria

Practice: Competence Assessment System

Year of Introduction or Update: 2009

Description: Spearheaded by the Bulgarian Industrial Association in collaboration with social partners and the Ministry of Labour and Social Policy, this national-level initiative creates an information system to assess workforce competencies across different economic sectors and regions. It forecasts labour demand by qualification level, develops competence standards, assesses employee intelligence, and links it to the European Qualifications Framework. The system uses e-tools for self-assessment, helps match graduates and jobseekers with market needs, and informs HR practices and career guidance.

Expected impact on the startup ecosystem: The system covers competency profiles for 1,300+ positions across 25 sectors, supported by 10 regional centres and 25 sectoral advisory boards. About 16,000 users completed 19,000+ self-assessment tests and accessed more than 5,000 e-training modules.

Croatia

Practice: Vocational Education and Training (VET) Vouchers

Year of Introduction or Update: 2022

Description: Croatia introduced an adult learning voucher scheme which provides financial support for adults to acquire digital, green, and labour-market-relevant skills, with training aligned with the Croatian Qualifications Framework (CROQF). The courses are offered by accredited providers, and cover areas such as IT, renewable energy, and professional upskilling. The scheme has also expanded to include Croatian language courses for migrant workers.

Expected impact on the startup ecosystem: By 2024, 29,000+ vouchers were approved, and close to 19,000 learners completed training. 65% of beneficiaries focused on digital skills, while 14% opted for green competencies. Learner satisfaction is very high (around 92%), which demonstrates the scheme's effectiveness. Beyond individual upskilling, the programme has strengthened workforce adaptability, promoted lifelong learning, and supported Croatia's digital and green transitions which align with start-ups' talent needs.

Cyprus

Practice: Scheme for Job Placement and Training of Tertiary-Education Graduates

Year of Introduction or Update: 2009

Description: Cyprus Scheme for Job Placement and Training of Tertiary-Education Graduates, implemented by the Human Resource Development Authority (HRDA), supports young graduates transitioning into the labour market. Fully funded through a payroll levy, the scheme offers subsidised in-company training—ranging from 6 to 12 months—with mandatory minimum remuneration (around €1,600/month for employment subsidy, up to €1,800/month). It focuses on employability, job search, and career skills, guided by real-time labour market intelligence to match graduate skills with employer demand. Social partners, employers, and trade unions monitor the scheme's design and effectiveness.

Expected impact on the startup ecosystem: Over the past five years, HRDA has delivered 30,500 training programs, engaging approximately 275,000 participants—at a total cost of around €102 million. Notably, in early schemes combining training with employment, 82% of graduate participants remained employed after completion, demonstrating strong effectiveness in securing long-term job placements. HRDA also systematically evaluates scheme outcomes and adapts funding and program design based on follow-up assessments and evolving labor market needs.

France

Practice: Personal Training Account

Year of Introduction or Update: 2015

Description: Established under the "Freedom to Choose Your Professional Future" reform, the programme grants individuals a personal lifelong learning account. Each employee accumulates annual credits—approximately €500 per year, up to €5,000 (or €8,000 for low-skilled workers), financed via employer contributions—to spend on certified training courses. The account is portable across jobs and employment status, and includes access to career guidance via public employment services. It enables individuals to self-manage their training choices, aligning with labour market needs.

	Expected impact on the startup ecosystem: By 2018, 383,000 employees (about 1.7% of the private-sector workforce) and 149,000 unemployed individuals used the account for training, half of users being aged 25-44. This growth reflects rising engagement in continuing education, supporting career progression, skill alignment, and employability.
Malta	**Practice:** Skills Development Scheme
	Year of Introduction or Update: 2020
	Description: The national support programme run by Malta Enterprise subsidises companies to deliver non-mandatory training that enhances employees' digital, green, career-management, and general employability skills. The initiative is grounded in labour market foresight and aims to reduce skill shortages, mismatches, and obsolescence by encouraging businesses—especially smaller ones—to invest in on-the-job learning aligned with future needs. In 2020, a €6.5 million top-up specifically targeted firms with fewer than 50 employees, indicating increased support in response to disruptions related to the COVID-19 pandemic.
	Expected impact on the startup ecosystem: This scheme helped employers adapt to sudden structural shifts such as the move to remote work by fostering internal skill-sharing between experienced and younger staff. It served as an effective tool to maintain business continuity during economic slowdowns and encouraged retention by upskilling the existing workforce.

Table 6. Reskilling and upskilling best practices at national level.
Source: CEDEFOP

CEDEFOP

The CEDEFOP is a specialised agency of the EU established in 1975 and headquartered in Thessaloniki, Greece. Its mission is to support the development, implementation, and evaluation of VET policies across EU Member States.

CEDEFOP plays a central role in ensuring VET systems are modern, inclusive, and aligned with the evolving needs of Europe's labour markets. The organisation works closely with the EC, national governments, social partners, and researchers to provide data-driven insights that inform policy decisions.

Innonext

The Innonext programme, launched in September 2024, is a flagship initiative led by the EIC, coordinated in partnership with the EIT Community, designed to foster collaboration between Europe's deep-tech academic talents and innovative startups and SMEs, with an average of 3–6-month internships for students and researchers. The scheme intends to boost innovation capacity, talent access, and commercialisation outcomes.

Talent attraction

In the past decade, local authorities across Europe have been launching initiatives and policies aiming to attract high-skilled talent or founders to either work for local companies or to set up their business within their borders.

In moments of global uncertainty,

cross-border collaboration is no longer just an aspiration - it is a necessity. Europe is once again positioning itself as a powerful framework for building strategic resilience. As the Draghi report makes clear, our 'open strategic autonomy' rests on competitiveness - and competitiveness begins with talent. Talent is per se, as clearly stated by the AB members, a strategic asset.

Key policies carried out in Europe to support this action

In response to the growing global competition for innovation, entrepreneurship, and high-skilled talent, many European countries have a variety of visa schemes and regulatory frameworks to attract international entrepreneurs, researchers, and tech professionals. These initiatives are particularly relevant to strengthen startup ecosystems, promote digital transformation, and drive economic growth. These programmes help build resilient innovation hubs, while also addressing local skill shortages and driving job creation.

Digital nomad visas

The Digital nomad visa schemes highlighted below denote a recent and growing effort to attract third-country talent by offering tailored legal pathways for location-independent workers. Cyprus limits permits to 500 but encourages digital workforce growth tied to innovation. Estonia stands out for its structured eligibility criteria and minimum income threshold, thereby encouraging startup creation. Spain's Startup Law offers longer-term residence options and renewal flexibility, positioning the country as a competitive hub for digital professionals.

Cyprus

Practice: Digital Nomad Visa Scheme

Year of Introduction or Update: 2021

Description: The Cyprus Digital Nomad Visa scheme allows nationals from non-EU and non-EEA countries to reside temporarily in Cyprus and work for an employer registered abroad or perform work through telecommunications technology for companies or clients located abroad. It has been piloting a ceiling of 500 residence permits since 2022. A first temporary residence permit is issued with a validity of one year. In case of renewal, the temporary residence permit is issued with a validity of maximum two years.

Expected impact on the startup ecosystem: The Cyprus Digital Nomad Visa Scheme has enticed individuals, and their families, from non-EU and non-EEA countries to live and work from Cyprus, thereby promoting a vibrant digital workforce that can contribute to local innovation and economic growth.

Estonia

Practice: Digital Nomad Visa

Year of Introduction or Update: 2020

Description: Estonia's Digital Nomad Visa offers remote workers the opportunity to live and work in Estonia for up to one year, provided they meet certain criteria. To be eligible, applicants must be able to work independently of location and have the ability to work remotely. The visa is designed for those who are either: 1) Employed by a company registered outside of Estonia 2) Conducting business through their own company registered abroad 3) Freelancing for clients predominantly based outside of Estonia

Additionally, applicants must demonstrate a minimum monthly income of €4,500 net. The application process takes up to 30 days. When applying for a DNV, you can apply for either an Estonian long-stay visa (D-visa) or a short-stay visa (C-visa), depending on your planned period of stay. Applications can be made in English, Estonian, or Russian. The state fee is a D-visa is €100 and for a C-visa is €80.

Expected impact on the startup ecosystem: Estonia's Digital Nomad Visa is expected to attract global talent and increase international collaboration. According to Startup Estonia, around 30% of digital nomads express interest in starting their own ventures, which could result in a measurable increase in new startups and higher levels of foreign investment.

Spain

Practice: Startup Law - Digital Nomads

Year of Introduction or Update: 2022

Description: Digital nomads are individuals from a third country authorised to stay in Spain to engage in remote work for companies located outside of Spain, exclusively using computer, telematic, and telecommunication means and systems. A visa is granted to international remote workers for a maximum of 1 year, unless the work period is shorter, in which case the validity of the visa will be the same as the work period. A Residence Permit can be requested up to 60 business days before the expiration of the visa. It is valid throughout the national territory and has a maximum validity of 3 years. Renewal can be requested for periods of 2 years, as long as the conditions that gave rise to the right are maintained.

Expected impact on the startup ecosystem: The Startup Law aims to enhance Spain's appeal to skilled remote workers, positioning the country as a top global destination for the strong growth in its tech industry.

Startup visas

The following examples are related to visa and residency programmes in Cyprus, Estonia, the EU, France, Malta, and Portugal aimed at attracting entrepreneurs, skilled professionals, and digital innovators from outside the EU. While not all schemes include "startup" in their name, they are mostly intended for tech founders willing to either start a new venture or expand an existing one. Estonia leads with its pioneering e-Residency Digital ID, enabling fully remote business creation and secure digital operations. France's French Tech Visa and its four-year renewable "Talent Passport" covers employees, founders, and investors without requiring a work permit. Malta and Cyprus focus on supporting third-country founders with residency schemes that promote startup development. Portugal's Startup Visa and the EU's Blue Card further enhance mobility for skilled workers, and recorded a surge in demand.

Cyprus

Practice: Startup Visa Scheme

Year of Introduction or Update: 2022

Description: The Scheme allows talented entrepreneurs from third countries, individually or as a team, to enter, reside, and work in Cyprus in order to establish/operate/develop a startup with a high growth potential.

Expected impact on the startup ecosystem: The Startup Visa Scheme has enabled talented entrepreneurs from third countries to live and work in Cyprus. Since its creation, the scheme has received more than 150 applications, with a 30% approval rate, which have brought €5 million in investments.

Estonia

Practice: E-Residency

Year of Introduction or Update: 2014

Description: E-Residency of Estonia is a government-issued digital identity which provides global entrepreneurs with remote access to the world's most digital country. It allows the user to securely authenticate themselves online and sign documents using the most secure and efficient electronic signatures. Plus, the ability to start a company 100% online from anywhere. Estonia was the first country to offer e-residency back in 2014.

Expected impact on the startup ecosystem: The e-Residency has enabled online and secure registrations, resulting in over 117,000 e-residents from more than 170 countries. This led to more than 32,000 companies created through e-residencies in diverse sectors, amounting to 12 billion euros in combined revenue.

European Union

Practice: EU Blue Card

Year of Introduction or Update: 2020

Description: The EU Blue Card is a work permit designed for highly skilled non-EU citizens. Key features include the ability to work and reside in any EU country, fast-track procedures, and family reunification rights.

Expected impact on the startup ecosystem: The EU Blue Card has facilitated the influx of highly qualified non-EU workers. In 2023 alone, a record 89,037 Blue Cards were issued, marking an 8.8% increase from the previous year. Germany, Poland, and France emerged as key players, issuing the majority of Blue Cards. Notably, citizens from India accounted for nearly a quarter of these cards, reflecting a strong link between the Blue Card initiative and the global tech workforce.

France

Practice: French Tech Visa

Year of Introduction or Update: 2017

Description: The French Tech Visa is a simplified procedure that allows tech workers to obtain a 4-year renewable residence permit, known as the "Talent Passport," for 3 categories of tech talent:
1) French Tech Visa for Employees (available to employees of French startups recognised as innovative, with an employment contract);
2) French Tech Visa for Founders (for founders of startups selected by partner incubators);
3) French Tech Visa for Investors (reserved for foreign business angels or investment funds wishing to open offices in France).
Main advantages include:
1) Valid for 4 years;
2) Does not require a work permit;
3) Includes family;
4) Adapts to life changes;
5) Renewable.

Expected impact on the startup ecosystem: The French Tech Visa has enabled non-European startup investors, founders and employees to live and work in France. Since its creation, this scheme has enabled more than 1,200 companies to recruit foreign employees.

Malta

Practice: Startup Residence Programme

Year of Introduction or Update: 2022

Description: The Malta Startup Residence Programme grants a 3-year residence permit, extendable for an additional 5 years, during which beneficiaries are able to work in Malta while launching their startup venture. Intended for non-EU nationals, this competitive programme is specifically designed to facilitate the setup of innovative startups and scaleups in Malta whilst supporting the immigration process of their founders/co-founders, core employees and respective immediate family members. Beneficiaries of this programme need to have a tangible presence in Malta (including living and paying taxes locally).

Expected impact on the startup ecosystem: The Malta Startup Residence Programme attracted non-EU foreign entrepreneurs to work and live in Malta. It helps establish their startups and scale up while supporting the immigration process.

Portugal

Practice: Startup Visa

Year of Introduction or Update: 2018

Description: Startup Visa is a residence visa, provided and approved through IAPMEI (Agency for competitiveness and innovation) for entrepreneurs from all over the world who wish to create or move their startup to Portugal. It is focussed on startups and/or projects focussed on technology and knowledge.

Expected impact on the startup ecosystem: The Startup Visa has enabled entrepreneurs from all over the world to create or move their startups to Portugal. Since its creation, 220 startups were approved from 600 applications, having created more than 500 jobs and attracted around €50 million.

Highly-qualified workers visa

Regarding highly-qualified workers, the following two Czech programmes (Key and Research Staff Programme and Highly Qualified Worker Programme) were both launched in 2019 to fast track visa processing for highly skilled foreign professionals. Czechia's Key and Research Staff Programme and Highly Qualified Worker Programme demonstrate a strategic focus on fast-tracking the entry of top international talent in innovation-driven sectors, thereby seeking to boost Czechia's startup ecosystem, enhancing competitiveness and accelerating innovation in high-tech and biotech industries.

Czechia

Practice: Key and Research Staff Programme

Year of Introduction or Update: 2019

Description: The Key and Research Staff Programme is a governmental initiative designed to expedite the hiring of highly qualified foreign workers, including managers, researchers, and specialists for roles critical to R&D and innovation. It aims to support Czech and foreign investors, research organisations, and technology companies by facilitating smoother and faster visa processing for essential personnel. The programme provides benefits such as quicker appointment scheduling at embassies and reduced visa processing times (around one month) for eligible employees with high-level qualifications and competitive salaries.

Expected impact on the startup ecosystem: The Key and Research Staff Programme has significantly reduced visa processing times for highly skilled employees to about one month, which is twice as fast as the standard process.

Practice: The Highly Qualified Worker Programme

Year of Introduction or Update: 2019

Description: The Highly Qualified Worker Programme is designed to attract highly skilled professionals, particularly in a broader range of industries, particularly in high-demand sectors like IT, healthcare, and engineering. It provides fast-track visa processing for roles requiring advanced degrees or specialised expertise.

Expected impact on the startup ecosystem: The Highly Qualified Worker Programme has ensured an influx of specialised talent that is expected to boost innovation and R&D output in startups, increasing competitiveness in sectors like tech and biotech.

Talent Attraction and Retention: Outside Europe

As a way to understand the global scenario, we have listed some examples of policies that refer to either talent attraction and/or retention. As mentioned in Chapter I, talent attraction and retention, have become pressing global challenges, shaping the competitiveness of advanced and emerging economies alike. Countries across North America, Asia, and Latin America are actively redesigning their migration, education, and innovation policies to secure the skilled workforce needed for technological transformation and economic growth. Understanding these international strategies is essential, as Europe competes in a global marketplace for talent where mobility, incentives, and opportunities increasingly determine the ability to innovate and lead.

Several third countries including Israel and Singapore also implemented measures to incentivise international highly skilled professionals to move within their borders to either set up their own company or work for local top tech firms. Israel's Visas for Foreign High-Tech Experts Incentive Programme prioritises specialists from visa-exempt countries, thereby enhancing the local tech ecosystem with over 300 approvals so far. In Singapore, the Tech.Pass offers great flexibility for experienced tech workers to engage in multiple roles across the sector, while the EntrePass supports early-stage founders. Together, these programmes reinforce both countries' positions as competitive global hubs for high-tech growth and innovation.

Israel

Practice: Visas for Foreign High-Tech Experts Incentive Programme

Year of Introduction or Update: 2018

Description: The visa programme for foreign high-tech experts, launched by the Innovation Authority together with the State Population and Immigration Authority, focuses on attracting high-tech talent as part of the shortage of skilled high-tech personnel in Israel.
Criteria for evaluation:
1. The foreign expert must be a citizen of one of the countries that are exempt from the requirement to issue a tourist visa;
2. The applicant's salary must be at least double the average wage in Israel;
3. The company submitting the request is a high-tech company authorised by the Innovation Authority.

Expected impact on the startup ecosystem: The Visas for Foreign High-Tech Experts Incentive Programme has attracted high-tech talent from across the world. Since its creation, more than 900 experts have been approved from more than 400 applications.

Singapore

Practice: Tech.Pass

Year of Introduction or Update: 2021

Description: Tech.Pass is a visa that allows established tech entrepreneurs, leaders or technical experts from around the world to come to Singapore to perform frontier and disruptive innovations. As an individualised pass, Tech.Pass holders are able to take on multiple roles concurrently in Singapore, such as:
1) Start and operate one or more tech companies;
2) Be an employee in one or more Singapore-based companies at any time;
3) Be a consultant or mentor, lecture in local institutions of higher learning; and/or

4) Be an investor or director in one or more Singapore based companies.
There is no need for Tech.Pass holders to apply for different passes as they transit between activities.
Tech.Pass holders are able to sponsor stay for spouse, children, and parents1 in Singapore on either a Dependant's Pass (DP) or a Long-Term Visit Pass (LTVP) issued by MOM.
The pass will be valid for 2 years in the first instance, and can be renewed for another 2 years, upon meeting renewal criteria.

Expected impact on the startup ecosystem: The Tech.Pass has enabled tech entrepreneurs, leaders and technical experts to live and work in Singapore. Since its creation, more than 300 individuals received the passes from a total of more than 500 applications.

Singapore

Practice: Entre.Pass

Year of Introduction or Update: 2024

Description: The Entre.Pass is a visa scheme for foreign entrepreneurs who want to start a business in Singapore. It allows eligible foreign entrepreneurs to start and operate a business in Singapore that is venture-backed or possesses innovative technologies.
There is no stipulated minimum salary, and a new pass and its renewal is valid for 1 year and the subsequent renewals are for 2 years.

Expected impact on the startup ecosystem: The Entre.Pass has enabled foreign entrepreneurs to start a business in Singapore. Since its creation, more than 2,500 passes have been approved from a total of 4,000 applications, with an estimated rate of 2 to 3 jobs creation per Entre.Pass holder.

Talent retention and re-attraction (In Europe)

Subtle Difference, but relevant:

Re-attraction introduces an additional layer to the talent challenge: it is about bringing back those who have left—emigrants, diaspora communities, or nationals working abroad. Rather than focusing only on "new" inflows, re-attraction policies aim to recover lost or circulating talent by creating the right incentives to return. Yet, return alone is not enough; effective retention mechanisms are essential to ensure that those who come back remain engaged, productive, and fully embedded within the local ecosystem.

The following table highlights three re-patriates-oriented programmes, most of them were launched fairly recently (from 2019 to 2022). Italy's *Rientro dei Cervelli* programme offers significant tax breaks to convince highly qualified Italians to return to their homeland, more than doubling annual return rates. Portugal's *Programa Regressar* facilitates the return of Portuguese emigrants and their families with tax exemptions and financial support, having brought back over 36,000 people, primarily young and educated. Spain's Startup Law also offers reduced tax rates for foreign talent engaged in startups and innovation, positioning the country as a welcoming destination for global entrepreneurs. These initiatives aim to counter brain drain and enhance national innovation ecosystems.

Italy

Practice: Rientro dei Cervelli

Year of Introduction or Update: 2019

Description: The "Rientro dei Cervelli" initiative offers attractive tax benefits to encourage professionals who have lived and worked abroad to return and contribute to Italy's economy, innovation, and academic landscape.
Tax benefits:
1) for highly qualified professionals - 50% (60% if minor child), up to 5 years;
2) Researchers/ professors - 90%, up to 6 years (extendable).

Expected impact on the startup ecosystem: In 2021, the number of Italians returning from abroad jumped from about 2 to 3 thousand per year to approximately 6.500 annually, with this trend remaining stable in subsequent years. This increase has been attributed to the incentives provided by the DL 34/2019 "rientro dei cervelli" decree.

Portugal

Practice: Programa Regressar

Year of Introduction or Update: 2019

Description: The Programa Regressar is a government initiative launched in July 2019, extended until 31 December 2026, aimed at facilitating the return of Portuguese emigrants, their descendants, and family members to Portugal. It provides tax incentives, financial aid, and credit lines, to help returnees access opportunities and reintegrate smoothly.
Tax benefits:
1) Returnees benefit from a 50% exemption on personal income tax (IRS) for the year of return plus the next four years (total of 5 years);
2) This exemption applies to income from employment as well as business or professional activities, with a cap of up to €250.000 per year.
Eligible individuals must:

- Become tax residents in Portugal by 2026;
- Not have been tax residents in Portugal in the previous five years;
- Have previously been tax residents;
- Have regularised tax status.

Expected impact on the startup ecosystem: Through this programme, more than 36.000 people returned to Portugal, from which more than 73% are aged between 25 and 44. Out of these, 34% are young people with a bachelor's, master's or doctoral degree.

Spain

Practice: Startup Law - Attracting and Retaining Talent

Year of Introduction or Update: 2022

Description: The Startup Law seeks to support innovative digital-based startups, especially in their early stages, by adapting the administrative, fiscal, civil and commercial framework to their specificities. All individuals who have not been tax residents in Spain during the 5 tax periods prior to the period in which the arrival in Spain takes place may apply for the regime.
It is required that the move to Spain takes place as a consequence of:
1) an employment contract;
2) the acquisition of the status of Director of an entity;
3) carrying out in Spain of an economic activity classified as an entrepreneurial activity of an innovative nature and of economic interest for Spain;
4) carrying out in Spain an economic activity by a highly qualified professional providing services to startups or carrying out training, research, development and innovation activities, receiving remuneration that represents in total more than 40% of the total business, professional and personal work income.
This special regime allows workers who move to Spain and become resident for tax purposes to be taxed on their income from employment at a general rate of 24% up to €600.000 (the rate is 47% for income exceeding €600,000).

Expected impact on the startup ecosystem: The Startup Law has enabled favourable tax regime for many foreign entrepreneurs, encouraging them to live and work in Spain.

Entrepreneurial Culture

This collection of international practices regarding entrepreneurial culture, makes up a broad spectrum of policies, programmes, platforms, and initiatives launched by governments and public institutions to enhance startup ecosystems in their respective countries.
These efforts aim to:

1. Support diverse founder backgrounds and increase inclusivity (e.g., France's French Tech Tremplin, Brazil's BNDES Garagem, South Korea's OASIS);
2. Provide direct funding and incubation support (e.g., Denmark's Innofounder, India's NIDHI programs, U.S. NSF I-Corps);
3. Foster public-private innovation collaboration (e.g., Germany's de:hub, Sweden's Ignite, Singapore's Open Innovation Platform);
4. Build national and regional innovation networks (e.g., Japan's J-Startup, India's Atal Innovation Mission, EU's Digital Innovation Hubs);
5. Create sector-focused accelerators and procurement pipelines (e.g., U.S. DARPA EEI, Netherlands' PIANOo and Startup Officers Network); and
6. Leverage events and educational campaigns to raise awareness and foster early-stage entrepreneurship (e.g., Austria's Youth Entrepreneurship Weeks, Iceland Innovation Week).

Collectively, they represent a global trend toward creating entrepreneur-friendly environments, recognising startups as engines of job creation, technological advancement, and social impact. One trend that stands out is the increased number of equity-free, government-backed programmes supporting tech entrepreneurship and innovation, particularly in emerging economies. There is also a growing focus on sector-specific accelerators, rapid digital incorporation platforms, and inclusive innovation, including regional and gender-based outreach. Deep tech and commercialisation support - such as the US' DARPA initiatives – demonstrate efforts in pairing R&D with market-ready solutions, thereby highlighting the strategic importance of startups in regional and national competitiveness.

Key policies carried out in Europe to support this action

The following table demonstrates European programmes that support startups through funding, incubation, networking, and specialised resources across several Member States.

Belgium

Practice: Wallonie Entreprendre Digital Deeptech

Year of Introduction or Update: 2016

Description: Wallonie Entreprendre Digital Deeptech promotes innovations and disruptive technologies such as artificial intelligence, the Internet of things, SaaS software, blockchain technology, medtechs or augmented reality. Wants to help at different stages in SMEs development, via the W.IN.G. fund, through more significant investments or by financing funds associated with these sectors.

Expected impact on the startup ecosystem: The Wallonie Entreprendre Digital Deeptech has enabled, through the W.IN.G fund, funding at different stages of development to help innovations and disruptive technologies grow and innovate, in sectors like artificial intelligence, blockchain, and medtech.

Denmark

Practice: Innofounder

Year of Introduction or Update: 2014

Description: Innofounder is a programme within Innovation Fund Denmark that consists of a 12-month full-time course for entrepreneurs.
The Innofounder course consists of:

- Salary financing so you can work full time (37 hours a week) to develop your entrepreneurial idea and build a business around it.
- Sparring and learning in the form of i.a. workshops, mentoring sessions and feedback from other entrepreneurs so you can mature your idea and develop as an entrepreneur.

Expected impact on the startup ecosystem: Every time Innovation Fund Denmark invests 1 million DKK through the Innofounder programme:

- 7 new full-time jobs are created
- 2.4 million DKK in yearly revenue is generated
- Almost 4 million DKK of additional capital is raised

France

Practice: The French Tech Tremplin programme

Year of Introduction or Update: 2019

Description: The French Tech Tremplin programme (now part of “Entrepreneuriat Quartiers 2030”) aims to increase diversity within the startup ecosystem. It provides incubation programmes to support startups created by underrepresented types of founders within the ecosystem (jobseekers, underprivileged neighbourhoods, rural areas, disabled people, refugees) including public funding, incubator support, mentoring by experienced entrepreneurs.

Expected impact on the startup ecosystem: The French Tech Tremplin programme has planned a budget of €50 million allocated for the period from 2024 to 2027, to support the creation of 1,000 new startups.

Germany

Practice: Digital Hub Initiative (de:hub)

Year of Introduction or Update: 2017

Description: The initiative is a nationwide network of 25 digital hubs that focus on fostering innovation by connecting startups, established companies, research institutions, and investors. These hubs specialise in areas such as artificial intelligence, smart manufacturing, logistics, and healthcare to create regional and national digital ecosystems.

Expected impact on the startup ecosystem: The de:hub initiative has significantly impacted the startup ecosystem by hosting over 24 major events annually with 12,000 participants to foster innovation, enabling startups to attract investors, gain visibility, and scale their operations while strengthening cross-industry collaborations and Germany's global competitiveness in technology.

Greece

Practice: Innovation and Networking Services of the National Documentation Centre

Year of Introduction or Update: 2021

Description: The provision of high-value, intermediate services, such as innovation consulting, networking and outreach activities, funding and matchmaking opportunities, and brokerage events towards Greek SMEs and startups, academia and R&D centres, and highly educated individuals and wannabe entrepreneurs through dedicated expert consultants enhances the knowledge and innovation profile of the domestic ecosystem and is in line with similar policy initiatives worldwide enhancing technology and industrial policy.
Services include the co-ordination of the Greek hub of the Enterprise Europe Network, and through this network EKT provides a range of services towards Greek SMEs. Other services include the operation of EKT as a National Contact Point for European Horizon Europe since FP5, providing access to funding, research and innovation policy insights. Furthermore, by being the EIT Health HUB for Greece since 2017, EKT provides support towards digital health-related startup acceleration and student training and creates a sustainable ecosystem fostering health innovation by accelerating the dialogue between hospitals and startups with the goal of co-creating innovative Value Based Healthcare Solutions, through the dedicated project SymbIASIS.

Expected impact on the startup ecosystem: Results/Impact 2023:
- 135 businesses and organisations supported;
- 220 research and business requests fulfilled;
- 120 businesses explored international partnerships;
- 17 successful business partnerships formed.

Iceland

Practice: Iceland Innovation Week

Year of Introduction or Update: 2021

Description: Iceland Innovation Week is a festival that highlights and celebrates the innovation ecosystem in Iceland, focusing on startups, entrepreneurship, and creative industries. Held annually in Reykjavík, this week-long event features a wide variety of activities, from panel discussions and workshops to pitch competitions and networking sessions. Key events include the Silicon Vikings Pitch Competition, where startups compete for visibility and potential investment.

Expected impact on the startup ecosystem: The Iceland Innovation Week has boosted visibility for Iceland's startups, facilitated international partnerships, and helped drive investment in the region. Events like the Silicon Vikings Pitch Competition can lead to direct funding opportunities, while networking sessions help foster a collaborative startup culture.

Lithuania

Practice: GovTech Lab initiatives

Year of Introduction or Update: 2019

Description: GovTech Lab Lithuania encourages startups to share information on how they are utilising open data to create new services and solutions through the Lithuanian Open Data Portal (data.gov.lt). Additionally, they are invited to take part in events (Open Data Events) and showcase their developed solutions.

Expected impact on the startup ecosystem: The GovTech Lab has enabled startups to leverage open data for innovative services and solutions.

Luxembourg

Practice: GovTech Lab

Year of Introduction or Update: 2020

Description: GovTech in Luxembourg is an initiative aimed at promoting digital transformation within the public sector by leveraging innovative solutions from startups and tech companies. It focuses on creating opportunities for technology-driven modernisation of public services and infrastructure.

Expected impact on the startup ecosystem: The GovTech initiatives have significantly enhanced collaboration opportunities between startups and the public sector, being reflected in Luxembourg's vibrant startup ecosystem, which includes over 500 active startups and 15 incubators, actively driving sector-specific advancements and creating avenues for scaling innovative solutions

Poland

Practice: VC Database Polish Market

Year of Introduction or Update: 2021

Description: The most important data from the Polish VC market available in one place. Enables startups to find relevant investors and vice-versa.

Expected impact on the startup ecosystem: VC Database Polish Market possesses information on investments of over 70 VC and PE funds, the profiles of about 650 companies in which the funds have invested and data on investments of PFR Ventures funds (2008 - H1 2023).

Poland

Practice: AI Startups Hunt

Year of Introduction or Update: n.d.

Description: The Foundation: AI Startups Hunt is a project of the Polish Development Fund (PFR), which aims to support the development of startups based on artificial intelligence. Main elements of the programme:
1. 5 open meetings for the startup community aimed at deepening knowledge about the business aspects of the development of a startup with an AI element;
2. Meetings with investment funds – workshops will be organised for selected startups to prepare for talks with VCs and 1-on-1 meetings with funds.

Expected impact on the startup ecosystem: Increased knowledge-sharing and awareness about the AI innovation ecosystem. Increased network connections with investors.

Sweden

Practice: IgniteSweden

Year of Introduction or Update: 2017

Description: Ignite Sweden is a nonprofit initiative that fosters innovation by connecting startups with large corporations and public entities to establish commercial collaborations.

Expected impact on the startup ecosystem: Ignite Sweden has over 4,000 startups registered on its platform and 1,750 selected by potential customers. Has facilitated over 7,300 interactions since 2017 resulting in 705 innovation collaborations.

The Netherlands

Practice: Startup Officers Network

Year of Introduction or Update: 2023

Description: Startup Officers Network is a network of commissionaires representing the Dutch governmental departments and municipalities. Entrepreneurs can contact a startup officer when:
i) they have a product or service that they want to introduce to the Dutch government;
ii) they think the Dutch government could be their launch customer;
iii) they are looking for collaboration with one of the ministries, municipalities, or provinces; specific legislation is getting in the way of an innovation.

Expected impact on the startup ecosystem: Startup Officers Network has increased awareness of how Dutch legislation promotes or blocks innovation and startup ideas. Increased collaboration and knowledge-sharing of gaps and opportunities between entrepreneurs and the government.

The Netherlands

Practice: Team Academy

Year of Introduction or Update: 2015

Description: Team Academy is a cross University programme of bachelor of Business Administration in Entrepreneurship in Amsterdam. Its purpose is to cultivate an entrepreneurial mindset and practical skills through a learning-by-doing approach.

Expected impact on the startup ecosystem: The Team Academy model raises the overall quality and resilience of founders, leading to stronger local and cross-border startup ecosystems. Over time, this generates denser entrepreneurial hubs, closer university–industry collaboration, and more internationalised startup activity across Europe.

Ukraine

Practice: European Digital Innovation Hub

Year of Introduction or Update: 2021

Description: The overall objective is to strengthen and extend the existing network of European Digital Innovation Hubs (EDIH), covering underrepresented regions of the Associated Countries, particularly Northen and Central Ukraine.
Complementary to the key objective, WIN2EDIH is focused on achieving specific objectives as follows:
1) Providing tailored services for deep-tech sectors & technologies;
2) Ensure availability of the infrastructure facilities related to deep-tech specialisation;
3) Establishing upskilling support to the target audience to increase the level of their literacy & digital opportunities;
4) Becoming the info centre of the grant opportunities and source of knowledge on how to attract investors;
5) Boosting integration of the Ukrainian innovation ecosystem to the European ones by interacting with the EDIHs, sharing best practices and specific knowledge in the deep tech sphere;
6) WIN2EDIH will serve as an access point to the European network of EDIHs, facilitating collaboration and knowledge exchange among local companies seeking expertise beyond their region.

Expected impact on the startup ecosystem: Engaging the startup ecosystem with the EDIHs network is intended to have a transformative impact on local startups, in particular by expanding resources, access to expertise and market integration:
1) Increased access to funding and investment opportunities;
2) Access to advanced infrastructure and technology;
3) Skills and knowledge transfer;
4) Facilitated market entry and expansion;
5) Improved international competitiveness;
6) Networking and collaboration opportunities.

Outside Europe

From outside Europe, the following examples focus on funding, incubation, acceleration, and government collaboration.
Across regions, these practices converge on a shared insight: talent and entrepreneurship are global strategic assets, and governments are stepping in with increasingly sophisticated tools to cultivate them. While approaches differ — Brazil and Chile focus on broad access to finance, India and Japan on ecosystem scaffolding, the U.S. on frontier innovation and sovereignty — they all reflect the same global reality: talent attraction, re-attraction, and retention cannot be left to the market alone. States are actively shaping entrepreneurial ecosystems to secure competitiveness, and Europe must benchmark itself against these models if it wants to remain at the forefront.

Brazil

Practice: The BNDES Garagem

Year of Introduction or Update: 2018

Description: The BNDES Garagem is a programme from the National Bank for Economic and Social Development (BNDES) that promotes the sustainable development of impact businesses by supporting entrepreneurial actions throughout Brazil. The programme offers benefits such as networking, acceleration, funding, exposure, services, partnerships, expert and mentor support, a collaborative network, and post-acceleration follow-up.

Expected impact on the startup ecosystem: The BNDES Garagem has supported over 200 startups, focusing on a variety of sectors including health, financial solutions, and environmental initiatives. The programme emphasises diversity, with a target for 40% of participants to come from Brazil's northern, northeastern, and central-western regions.

Chile

Practice: StartUp Chile

Year of Introduction or Update: 2010

Description: StartUp Chile is a government-backed accelerator programme which intends to transform Chile into the innovation and entrepreneurship hub of Latin America. The programme offers equity-free funding, co-working space, mentorship, and a global network to early-stage entrepreneurs from around the world. By attracting founders to base their startups in Chile, this scheme aims to stimulate the local ecosystem, promote knowledge exchange, and foster a culture of innovation within the country.

Expected impact on the startup ecosystem: Since its inception, StartUp Chile has supported over 2,000 startups from more than 85 countries, helping to position Chile as a regional leader in innovation. In a decade, StartUp Chile entrepreneurs have generated sales for more than one billion dollars worldwide. by conquering competitive markets such as the United States. The programme has played a critical role in nurturing a new generation of Chilean entrepreneurs and building a supportive infrastructure for startups. Additionally, its success has inspired similar initiatives in other countries, making it a pioneering model for public sector-driven entrepreneurship development.

India

Practice: Atal Innovation Mission (AIM) - Atal Incubation Centres

Year of Introduction or Update: 2016

Description: Atal Innovation Mission (AIM) is Government of India's flagship initiative to create and promote a culture of innovation and entrepreneurship across the length and breadth of the country. AIM's objective is to develop new programmes and policies for fostering innovation in different sectors of the economy, provide platforms and collaboration opportunities for different stakeholders, and create an umbrella structure to oversee the innovation & entrepreneurship ecosystem of the country. Atal Incubation Centres or AICs are business incubators established by AIM at universities, institutions and corporates to promote innovation and entrepreneurship among young innovators of the country. These Atal Incubation Centres aim to foster world-class innovation and support dynamic entrepreneurs, who want to build scalable and sustainable enterprises.

Expected impact on the startup ecosystem: The AIM has established 72 Atal Incubation Centres, creating +32,000 jobs and has supported +3500 startups, in which +1000 are women-led startups.

India

Practice: Fast tracking a startup through focused intervention (NIDHI-Accelerator)

Year of Introduction or Update: 2016

Description: Two broad types of Accelerator Programmes are supported by NSTEDB under this scheme, as follows:
a) Sectoral Programmes – These are accelerator programmes focused specifically on startups focused on a certain sector or theme. For example, accelerators can be focused on a very specific theme like Smart Cities or sector like healthcare. Sector-specific programmes have the advantage of being able to bring a critical mass of relevant stakeholders (mentors, customers, investors, policy makers, internal team etc.) under one roof;

b) Non-Sectoral Programmes – Non-sectoral accelerator programmes are most relevant for locations where critical mass of ventures within a specific sector may not exist and the "batch structure accelerator programme" may still be able to deliver significant value to the entrepreneurs, even though they are from diverse sectors.

Expected impact on the startup ecosystem: NIDHI-Accelerator has helped achieve the following goals in promoting high quality technology based entrepreneurship in India through:
NIDHI-Accelerator around 200 ideas shall be provided active and structured coaching ,training and mentoring support across 10-15 accelerator programmes every year.
Funding & Go-to-Market Access-It is envisaged that NIDHI-accelerators will produce at least 30-40 high-impact ventures every year.

India

Practice: Promotion and Acceleration of Young and Aspiring technology entrepreneurs – Support from Idea to Prototype (NIDHI PRAYAS)

Year of Introduction or Update: 2016

Description: The NIDHI-PRAYAS programme focuses on addressing the idea to prototype funding gap. The emphasis is to foster indigenously developed innovations and product in alignment with the nation's "AtmaNirbharBharat Mission".
Such an approach is expected to bring in new potential ideas into the incubation programmes, thereby increasing the flow of quality incubatee to the incubators.
NIDHI-PRAYAS is positioned as a pre-incubation initiative. DST aims to promote upto 10 PRAYAS Centres in incubators every year for next few years.
The host incubator would provide the furnished space for the PC. The prototype grant per innovator would be a maximum of Rs 10.00 lakhs and each centre would get 10 innovators per year.

Expected impact on the startup ecosystem: The outcome of the PRAYAS programme will be analysed based on any of the following parameters:
1) 60% of the innovators should have the working prototype within 18 months;
2) Progress towards IP filing, commercialisation in form of licensing or startup;
3) Funding/Investment received;
4) Expression of interest from manufacturers.

Japan

Practice: J-Startup

Year of Introduction or Update: 2018

Description: The J-Startup programme is design to support startups with global potential by providing access to funding, mentorship, and market entry assistance. Additionally, there are grants and support programmes available for startups at various stages of development.
Startups are evaluated according to criteria such as mission, originality, growth potential, etc. After the startups are evaluated by an external judging committee to then become J-Startups.
There is a support community and that connects private/public support to the selected startups. Venture capitalists, accelerators, large corporations and government organisations are the main players in the support community.
Support can be in the form of granting preferential treatment in support measures such as subsidies, and simplifying procedures; Utilisation of a regulatory sandbox system; Providing business space and granting fee preferential treatment; etc.

Expected impact on the startup ecosystem: The J-Startup programme has recognised and supported over 200 startups.

Singapore

Practice: BizFile+

Year of Introduction or Update: 2016

Description: BizFile+, an online platform that enables rapid business registration. A company can be incorporated in 15 minutes under this fully digital system, making it one of the fastest globally.

Expected impact on the startup ecosystem: BizFile+ has enabled rapid business registration in 15 minutes, reducing time-to-market through a streamlined process.

Singapore

Practice: Open Innovation Platform (OIP)

Year of Introduction or Update: 2019

Description: Open Innovation Platform (OIP) connects startups, technology providers and research institutes with companies and government agencies seeking digital solutions for their challenges. The platform fosters collaboration and encourages startups to provide innovative solutions through procurement.

Expected impact on the startup ecosystem: The OIP has increased the number of innovative solutions provided by startups to government agencies and companies.

United States

Practice: NSF Innovation Corps ((I-Corps)

Year of Introduction or Update: 2012

Description: The I-Corps Teams programme supports researchers interested in entrepreneurial education and mentoring, with the goal of reducing the time it takes to bring technologies from the laboratory to the marketplace.
Researchers participate in the seven-week programme as a team of three that consists of a technical lead, entrepreneurial lead and business mentor. Participants learn the art of customer discovery and business planning from seasoned entrepreneurs.
Applicants must have a technology development connection to an institution of higher education as well as submit their application from an institution of higher education.

Expected impact on the startup ecosystem: Impact achieved so far:
- More than 2,500 teams have participated in I-Corps since the programme's inception in 2012;
- More than half of these teams, nearly 1,400, have launched startups which have cumulatively raised $3.16 billion in subsequent funding.
- The I-Corps programme has trained more than 5,800 researchers, many of whom have gone on to create startup companies.

United States

Practice: DARPA Embedded Entrepreneur Initiative (EEI)

Year of Introduction or Update: 2022

Description: The Embedded Entrepreneur Initiative provides funding to connect DARPA's technical teams with commercialisation experts. It provides funding, mentoring, and connections. The EEI grants DARPA teams with access to techno-economic market mapping to understand the commercial market for the technology's success and connections to investors and corporate partners to bring in curated capital. DARPA will continue to scale the EEI programme through regional Commercial Accelerators. Concretely, the resources provided include:
- Non-dilutive funding to hire a seasoned entrepreneur or business executive for 1 to 2 years with the goal of developing a robust go-to-market strategy for both defense and commercial markets;
- Dedicated commercialisation mentors with extensive private sector experience.

Expected impact on the startup ecosystem: Since 2022, the EEI programme has helped DARPA performers raise over $1 billion in private investment capital and launch over 21 new products, services, and capabilities. Additionally, U.S. corporations have invested $639 million in acquisition of DARPA early-stage technologies.

United States

Practice: DARPA Regional Commercial Accelerators

Year of Introduction or Update: 2024

Description: DARPA has selected five top technology accelerators from across the nation as DARPA Commercial Accelerators to facilitate rapid commercialisation and scale of DARPA-funded technologies. Accelerators will help advance and scale early-stage technologies for national and economic security. DARPA Commercial Accelerators will enhance and scale Commercial Strategy's successful Embedded Entrepreneur Initiative (EEI) pilot programme.

Expected impact on the startup ecosystem: Support the EEI programme so that more DARPA-funded teams can recruit top talent, develop robust go-to-market strategies, raise capital, and scale operations, turning groundbreaking technology into high value for national, economic, and societal impact.

For this exercise to be easier to understand, we have divided these specific practices per clusters:

1. State-backed financing and risk-sharing

Several countries outside Europe are using large-scale public financial institutions or sovereign funds to reduce risk for early-stage companies and mobilise private capital. Brazil's BNDES Garagem and Chile's StartUp Chile stand out as pioneering examples: both provide direct financing, mentoring, and internationalisation support to startups, effectively lowering barriers for entrepreneurs in emerging economies. Similarly, Singapore's Bio4 and Open Innovation Platforms leverage state resources to accelerate biotech and cross-sector innovation by funding collaborations between startups, corporates, and research institutions. These initiatives show how governments can act as both financiers and ecosystem builders, setting conditions for scale while sharing risk with private actors.

2. Acceleration platforms and ecosystem catalysts

India's Atal Innovation Mission (AIM) and Fast-track Incubator partnerships, along with Translational and Commercialisation Schemes (PRAYAS, etc.), demonstrate how structured accelerator networks can anchor entrepreneurial ecosystems in developing economies. These models focus not only on early-stage capital but also on capacity building, mentorship, and access to specialised infrastructure. Japan's J-Startup programme mirrors this logic by positioning the government as a curator, selecting high-potential startups and connecting them with global markets. The common thread here is the recognition that ecosystems require strong institutional scaffolding: accelerators, incubators, and innovation hubs become the connective tissue that enables startups to thrive.

3. Frontier innovation and strategic autonomy

In the US, a different set of practices illustrates how governments use advanced innovation agencies to secure strategic autonomy in critical technologies. The DARPA Entrepreneurial Initiatives (EED, Commercial Accelerator, etc.) and the NSF I-Corps programme are designed to translate frontier research into market-ready companies, bridging the gap between scientific excellence and entrepreneurial application. By fostering deep-tech ventures with high-risk/high-reward potential, these initiatives not only strengthen national competitiveness but also ensure that critical technologies, such as AI, biotech, quantum, or defence systems, are developed and scaled domestically rather than abroad.

Final Takeaways

At national level, Europe is moving forward with concrete initiatives to strengthen talent and entrepreneurial culture. However, as mentioned by ESNA AB working groups, there is still a lot left to be done to accelerate the implementation of these policies or create new ones.
Reskilling and upskilling policies, talent attraction schemes, and re-attraction programmes are helping Member States address gaps, yet disparities remain across regions, with brain drain and uneven entrepreneurial activity still shaping the continent's competitiveness. Furthermore, international comparison underlines that Europe cannot operate in isolation: from Brazil and Chile's state-backed risk-sharing, to India and Japan's ecosystem accelerators, to the U.S.' frontier innovation models, governments worldwide are treating talent and entrepreneurship as strategic assets.

• Europe has advanced in designing policies for **talent and entrepreneurial culture**, but efforts remain fragmented and uneven across Member States.

• **Reskilling and upskilling** initiatives are essential to align labour markets with strategic sectors (AI, clean tech, cybersecurity) and to empower diverse groups (youth, women, migrants, freelancers).

• **Talent attraction** policies (e.g. startup visas, digital nomad schemes, high-skilled worker programmes) are helping Europe compete globally, yet the scale of demand exceeds current efforts.

• **Re-attraction and retention** strategies are increasingly relevant to counter brain drain, with countries like Italy, Portugal, and Spain offering tax incentives and financial support to bring back skilled nationals.

• **Global competition for talent is intensifying**, with countries outside Europe (e.g. Chile, Singapore, U.S., Israel, India, Japan) deploying bold programmes that combine finance, accelerators, and frontier innovation.

• The common global trend is that **talent and entrepreneurship are treated as strategic assets**, requiring proactive state intervention rather than reliance on market forces alone.

• For Europe, the path forward lies in building on national best practices, learning from international benchmarks, and scaling collective action to safeguard **innovation, competitiveness, and strategic autonomy**

V. Suggested solutions and KPIs

Key Themes

- Specific recommendations for each action
- Proposed roadmap with implementation and milestones
- Key Performance Indicators per action

This is the most action-oriented chapter of this Volume. While the previous sections explored the challenges, trends, and underlying dynamics shaping Europe's talent and entrepreneurial culture, this last section directly puts forward solutions. The following proposals stem from ESNA's AB vision and insights, enriched by the knowledge collected through national best practices and prior workstreams. The focus is therefore on presenting concrete levers that policymakers and ecosystem leaders can put into practice.

To ensure clarity and applicability, this chapter is structured into two complementary parts: **Talent** and **Entrepreneurial Culture**. Within Talent, the emphasis is placed on reskilling and upskilling, targeted opportunities for specific groups, frameworks for emerging work models, and strategies to attract, retain, and re-attract skilled individuals in Europe. Within Entrepreneurial Culture, the focus shifts to strengthening the softer yet equally decisive dimensions: inspiring role models, scaling entrepreneurial education, empowering communities and peer-networks, and developing ways to measure cultural progress. Together, these proposals aim to move beyond diagnosis into implementation. They are designed to serve as a toolbox - practical and forward-looking- ensuring that Europe nurtures its existing talent and entrepreneurial spirit while building the conditions to remain globally competitive in the decades to come. Practically, we have divided this section into two parts:

Talent

Reskilling and upskilling

- Building new opportunities for specific target groups (tech entrepreneurs & founders)
- Assess which skills are needed in Europe today
- Scaling an aligned framework for a freelancer economy

Talent attraction

- Integration and talent attraction for EU candidate countries
- Accelerating mobility
- Facilitating access to grants[76]

[76] The grants considered in these recommendations are not necessarily limited to talent development.

Talent retention and re-attraction

- European identity - Get started now!
- Compensation and contractual conditions
- Academia & talent retention
- Building an attractive career vision for graduates across Europe

Entrepreneurial Culture

- Leveraging entrepreneurship through positive role models;
- Scaling and upgrading entrepreneurial education;
- Strengthening communities, peer-networks, and knowledge transfer; and
- Measuring Europe's entrepreneurial culture.

Talent


Q3
Q4
Rights
Improve
Trello
Build
NPS
Launch
new
website
Zendesk
integration
Azure
integration
in-app
notifications
Airtable
integration
Restructure
onboarding
flow
Trello
integration
SSO/
SAML
Chatbot
Allow
dependencies
GitHub
integration

Action #1 Reskilling and upskilling

Description

The initiatives proposed by ESNA and its AB, listed below, provide a strong framework for advancing re-skilling and upskilling across the EU, particularly in the context of evolving labour markets, technological transformation, and the growing demand for entrepreneurial and freelance work[77].

1. Building new opportunities for specific target groups[78]

Explanations and rationale: By developing new programmes aimed at specific groups, these actions will directly enhance the reskilling and upskilling of populations that are often underrepresented in entrepreneurship and innovation. Tailored interventions ensure that individuals of different ages and backgrounds gain access to resources that enable them to acquire entrepreneurial and digital skills. This approach not only increases employability but also broadens participation in the innovation economy[79]. The inclusion of diverse beneficiaries supports social cohesion while ensuring that reskilling efforts are more inclusive and impactful.

National level

• Design, fund and intensify national re-skilling programmes targeting under-represented groups through governments (Table 1)

• Integrate entrepreneurial modules into vocational training[80] and higher education curricula – ensuring practical exposure to startup ecosystems – by national employment agencies and ministries of education.

• Offer tax incentives or subsidies to start-ups that invest in training employees from vulnerable groups.

• Support regional hubs of excellence in reskilling, tailored to the needs of critical industries such as AI, energy, and health tech by public-private partnerships (see Chapter III for further details).

EU level

• The EC could expand instruments such as the Pact for Skills and European Year of Skills to include specific calls targeting underrepresented groups across Member States.

• Fund cross-border training initiatives that enable mobility and peer learning for entrepreneurs and talent through Horizon Europe, Erasmus+, and the Digital Europe

[77] Note on freelance Work; freelancers were identified as one of the target groups that may require some support and a deeper understanding of their value in the European economy.

[78] Table 1: Refers to the specific target groups identified by ESNA's Advisory Board.

[79] Innovation Economy follows Joseph Schumpeter's Innovation theory that entrepreneurs drive economic change by introducing disruptive innovations. Schumpeter, J. A. (1942). Capitalism, socialism and democracy.

[80] Vocational training: education and training which aims to equip young people and adults with knowledge, skills and competences required in particular occupations or more broadly on the labour market'. European Commission. (2020). VET skills for today and for the future. Publications Office of the European Union. https://op.europa.eu/webpub/empl/VET-skills-for-today-and-future/en/

Programme[81].

- Create a framework identifying minimum standards and recognition systems for entrepreneurial and digital skills, ensuring comparability across Member States, building upon EntreComp and Digital Competence Framework for Citizens (DigComp)[82].
- Earmark structural and investment funds (e.g. ESF+, ERDF) to scale successful national pilot programmes and ensure that local good practices achieve EU-wide impact.
- Expand monitoring and KPIs on inclusion, guaranteeing that reskilling efforts contribute to both competitiveness and cohesion across the Union[83].

2. Assess which skills are needed in Europe today (See Chapter III)

Explanations and rationale: A structured assessment of skill requirements is critical to align reskilling and upskilling programmes with real market demands. By identifying key areas of growth, particularly in entrepreneurship, startups, and emerging industries, these actions will help bridge existing skill gaps. Educational programmes developed because of this assessment will prepare individuals with the competencies most relevant to Europe's economic future. Consequently, this ensures that reskilling efforts are targeted, efficient, and capable of supporting both traditional workers and those transitioning into new career paths.

National level

- Strengthen EU-wide methodologies for skills intelligence and anticipation, ensuring comparability across Member States via CEDEFOP, ETF and Eurostat, paired with a close cooperation with industry associations, universities, think tanks, foresight centres and startup hubs.
- Establish sector-specific skills councils (e.g., for AI, quantum, biotech, green tech) based on CEDEFOP Skill forecast's sector section to regularly identify labour shortages and align training offers accordingly.
- Introduce real-time labour market observatories utilising national employment agencies' data that track vacancies, employment trends, and regional differences in demand.
- Embed findings directly into national education and training reforms, ensuring vocational schools, universities, and re-training programmes remain relevant. Micro-credentials, sandbox pilots, or dual-track models could make curriculum updates significantly more agile while still preserving high quality and academic standards.
- Provide incentives for startups and SMEs to report skill needs, feeding into the national assessment ecosystem.

[81] Erasmus for young entrepreneurs is a programme with already many of these qualities that could be taken as an initial step.

[82] Joint Research Centre. (n.d.). Digital Competence Framework for Citizens (DigComp). European Commission. Retrieved October 1, 2025, from https://joint-research-centre.ec.europa.eu/projects-and-activities/education-and-training/digital-transformation-education/digital-competence-framework-citizens-digcomp_en

[83] See ESNA Monitoring of the Standards (Scoreboard)

EU level

- The EC, via CEDEFOP, ETF and Eurostat, could strengthen EU-wide methodologies for skills intelligence and anticipation, ensuring comparability across Member States.
- Expand initiatives such as the ESCO to include startup-specific and entrepreneurial competencies.
- Facilitate cross-country benchmarking to identify common shortages (e.g., cybersecurity experts, deep-tech engineers, green-transition specialists).
- Integrate the results into EU-level funding programmes (Horizon Europe, Erasmus+, Digital Europe Programme) to prioritise training projects in areas of highest need.

3. Setting up a framework for a freelancer economy

Explanations and rationale: The establishment of a sustainable framework for freelancers will have a significant impact on upskilling, especially in tech-related fields. Freelancers often face challenges in accessing structured training and development opportunities. By promoting programmes that strengthen freelance structures and encouraging continuous learning, individuals will be better equipped to adapt to technological changes and market shifts. This fosters resilience and ensures that freelancers remain competitive in an increasingly digital and globalised economy.

National level

- Introduce legal and tax frameworks that recognise freelancers as a core part of the labour market, providing them with fair access to social protection, pensions, and healthcare.
- Establish national training credits or vouchers for freelancers to access upskilling programmes in digital skills, entrepreneurship, and sector-specific expertise.
- Support the creation of freelancer co-operatives or associations that offer shared resources, mentorship, and peer learning opportunities.
- Partner with chambers of commerce and startup hubs to integrate freelancers into innovation ecosystems, ensuring they can contribute to and benefit from scaling industries.
- Create portable benefits systems, allowing freelancers to retain social security entitlements when moving between contracts, sectors, or regions.

EU level

- Develop an EU Framework for Freelancers, building on the European Pillar of Social Rights, to ensure minimum protections, training access, and mobility rights for independent workers.
- Expand Erasmus+ and Digital Europe to include mobility and exchange programmes for freelancers, especially in tech and creative industries.
- Launch a European Freelancers Skills Fund, co-financed through ESF+ and Horizon Europe, dedicated to continuous training in high-demand areas (AI, data,

green tech, cybersecurity).

- Ensure recognition of freelancers within EU Startup and Scaleup Strategy KPIs, highlighting their contribution to innovation and digital transformation.
- Coordinate cross-border best practice sharing among Member States to harmonise taxation, portability of rights, and access to training.

Suggestions and KPIs

1

Suggestions by Advisory Board

Building new opportunities for specific target groups

KPIs

# of existing programmes in the next 3 years.

# of beneficiaries coming from these programmes in the next 3 years.

Increase the number of founders at different ages (monitoring).

Connection with SNS (when applicable)

SNS #7 Social inclusion, diversity and protecting democratic values

2

Suggestions by Advisory Board

Assess which skills are needed in Europe today

KPIs

educational programmes related to entrepreneurship/startups.

people or startups that go through these programmes.

3

Suggestions by Advisory Board

Setting up a framework for a freelancer economy

KPIs

# of programmes supporting an adequate freelancers' structure.

# of tech-related freelancers in Europe in the next 3 years.

The first suggested action is related to SNS #7, more specifically with Substandard 7.1 - Incentives for Startups. In this substandard, ESNA analyses three indicators, as shown in the following table:

Substandard 7.1. Incentives for Startups

- Existence of national awards and policies for startup role models
- Existence of social inclusion mobilisation initiatives
- Existence of incentives for diversity hiring

Final recommendations: Europe must institutionalise lifelong learning systems that equip workers, freelancers, and entrepreneurs to adapt to technological change and new market realities.

1. Targeted programmes for underrepresented groups (e.g. women in deep tech, mid-career professionals, migrants, older workers)[84].

2. Skills foresight mechanisms to regularly identify emerging skill needs, especially in critical industries (AI, semiconductors, clean tech, health).

3. Freelancer economy framework to provide access to training, mentoring, and financing for self-employed workers.

Action #2 Talent attraction

Description

The proposed actions by the AB are designed to strengthen Europe's position as a global hub for entrepreneurial and industrial talent. By fostering integration and facilitating mobility, these measures will create an environment that attracts high-quality professionals from both EU candidate countries and beyond.

1. Integration and talent attraction for EU candidate countries[85]

Explanations and rationale: Encouraging the participation of entrepreneurs and highly skilled professionals from EU candidate countries enhances Europe's overall talent base. This measure not only attracts new expertise but also promotes long-term integration by enabling individuals to contribute directly to Europe's innovation ecosystem. The presence of entrepreneurs from diverse regions brings fresh perspectives, fosters cross-cultural collaboration, and supports the transfer of knowledge. As a result, Europe strengthens its reputation as an attractive destination for ambitious talent while building stronger ties with candidate countries.

National level

- Introduce fast-track visa schemes and residence permit tailored for entrepreneurs, researchers, and highly skilled workers from candidate countries[86].
- Develop bilateral talent agreements with candidate countries, enabling smoother mobility and recognition of qualifications.
- Support incubators and accelerators that specifically include founders from candidate countries, with mentorship and access to local investors.
- Provide language and cultural integration programmes, ensuring that incoming professionals are well-prepared to participate in local ecosystems.
- Establish bridge programmes in universities and vocational schools that facilitate joint research, study exchanges, and entrepreneurship training with candidate country institutions.

[84] See Table 1

[85] Albania, Bosnia and Herzegovina, Georgia, Moldova, Montenegro, North Macedonia, Serbia, Türkiye, and Ukraine.

[86] Please visit ESNA's Best Practices Catalogue for further details Best Practices Catalogue | ESNA

EU Level

- Expand EU Blue Card and Talent Pool initiatives to explicitly include entrepreneurs and skilled workers from candidate countries, harmonising pathways across Member States.
- Through Horizon Europe, Erasmus+, and InvestEU, create dedicated funding lines for startups and research projects involving candidate country founders.
- Strengthen mutual recognition of skills and diplomas between EU and candidate countries via EU-wide frameworks (ESCO, Europass, EQF).
- Integrate talent attraction from candidate countries into the EU Startup and Scaleup Strategy, ensuring KPIs on cross-border founder participation.
- Use pre-accession funds (IPA III[87]) to finance mobility, training, and entrepreneurial exchange programmes, building long-term ties ahead of full EU membership.
- Coordinate with national governments to monitor integration outcomes, ensuring that talent attraction aligns with cohesion and competitiveness goals.

2. Accelerating mobility [88]

Explanations and rationale: By increasing the number of non-Europeans working in critical industries, Europe ensures the rapid infusion of essential skills into its economy. This action is particularly important for sectors facing labour shortages or undergoing technological transformation. Accelerated mobility allows Europe to compete globally for top professionals, making it an attractive destination for individuals seeking opportunities in high-demand industries. At the same time, it creates a dynamic environment where international talent collaborates with local professionals, fostering innovation and resilience within the workforce.

National level

- Establish fast-track visa schemes and residence permits targeted at professionals in critical industries (e.g., AI, quantum, biotech, clean energy, cybersecurity).
- Introduce tax incentives or relocation grants for companies hiring international experts in areas with proven labour shortages.
- Develop bridging programmes (e.g., language courses, cultural integration, skills validation) to ensure smoother integration of non-EU workers into local labour markets.
- Support regional talent hubs where international professionals can connect with startups, research centres, and industry leaders.
- Partner with national universities and research institutes to create joint training or dual-degree programmes, attracting global students who can later transition into the national workforce.

[87] IPA III: The Instrument for Pre-accession Assistance (IPA) is the means by which the EU has been supporting reforms in the enlargement region with financial and technical assistance since 2007.

[88] Opportunity Hub (OH) is ESNA's digital gateway to Europe's professional, entrepreneurial, and investment ecosystem, structuring fragmented information on country conditions, funding and grants, and visa and relocation pathways into tailored, step-by-step journeys for international talent, startup founders, investors, and researchers. Anchored in ESNA's Startup Nations Standard context and the Startup Europe agenda, OH reduces search costs and uncertainty by translating policies and programs into actionable decisions—helping users compare countries, navigate Blue Card and national schemes, identify funding routes, and execute moves, hires, and investments at scale

EU level

- Expand the EU Talent Pool and EU Blue Card schemes, making them more accessible and harmonised across Member States for critical industries.
- Establish an EU Critical Skills Visa[89] linked to the list of 11 critical industries[90], enabling fast-track recruitment of international professionals.
- Coordinate pan-European recruitment campaigns showcasing Europe as a leading destination for global talent in deep tech and green transition sectors.
- Use Horizon Europe, Digital Europe, and InvestEU to fund mobility projects that pair international experts with European start-ups and research centres.
- Develop EU-wide recognition frameworks for international qualifications, ensuring rapid validation of skills in high-demand sectors.
- Monitor and report through an EU Talent Dashboard on the inflow of non-EU professionals into critical industries, aligned with competitiveness and resilience goals.

3. Facilitating access to grants (Connected to ESNA's Investment Volume)[91]

Explanations and rationale: Simplifying and expanding access to grants has a direct impact on talent attraction, as financial support is a key factor in determining whether entrepreneurs and professionals choose Europe as their base of operations. By ensuring a higher percentage of successful grant applications, Europe provides tangible incentives for international talent to establish themselves in the region. These grants empower individuals to develop their projects, launch startups, or engage in research, making Europe an attractive destination for innovators who seek both opportunity and stability, in keeping with the Choose Europe initiative.

National level

- Simplify national grant application procedures by reducing bureaucracy, harmonising requirements, and offering multilingual guidance for international applicants.
- Develop one-stop-shop platforms at the national level, where applicants can access guidance, mentorship, and legal support during the grant application process.
- Ensure regional innovation agencies promote grants actively to international talent and link them with local incubators, universities, and industry partners.
- Introduce match-funding schemes, where national governments co-invest alongside EU or private funding to support international founders.

[89] Blue Card could be an option as to reach a legal document that support this aim.

[90] See Chapter II

[91] Europe Startup Nations Alliance. (2025, May). Building a competitive Europe: the role of startup and scaleup ecosystems. Volume II: Investment (ESNA Compendium). Europe Startup Nations Alliance. https://www.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.-ii-investment.

EU level

- Simplify access to major programmes such as Horizon Europe, Digital Europe, and Erasmus+ by streamlining calls, reducing complexity in reporting[92], and creating fast-track evaluation paths for international entrepreneurs.
- Build upon the EU Funding and Tenders portal to consolidate all EU-level opportunities in one accessible, multilingual platform for non-European applicants.
- Introduce dedicated EU talent grants for international founders and researchers working in critical industries, aligned with the EU Startup and Scaleup Strategy.
- Provide EU-wide training and advisory networks (through Enterprise Europe Network, National Contact Points, etc.) to support international talent in navigating grant applications.
- Collect and publish data on grant success rates for international applicants, ensuring transparency and accountability in improving accessibility[93].

[92] See Europe Startup Nations Alliance. (2025, May). Building a competitive Europe: the role of startup and scaleup ecosystems. Volume I: Regulatory Barriers (Red Tape) (ESNA Compendium). Europe Startup Nations Alliance. https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.i-regulatory-barriers.pdf

[93] EU grant schemes are often characterised by low accessibility, with success rates in some programmes dropping below 5%. The primary challenge is not the quality of applications, but rather the limited availability of funding. A notable example can be drawn from Lithuania that redirected part of its ERDF resources to support companies via the European Innovation Council (EIC). This practice demonstrates a constructive approach to bridging funding gaps and ensuring that high-quality projects do not remain unsupported.

Suggestions and KPIs

1

Suggestions by Advisory Board

Integration and talent attraction for EU candidate countries

KPIs

increasing the numbers of entrepreneurs or high-quality talent from "EU candidate countries" in the next 3 years.

Connection with SNS (when applicable)

SNS #2 Attracting and retaining talent

2

Suggestions by Advisory Board

Accelerating mobility

KPIs

number of non-Europeans working on the critical industries on the next 3 years.

number of successful grant applications by international entrepreneurs.

% of EU startups with founders from candidate countries.

Connection with SNS (when applicable)

SNS #2 Attracting and retaining talent

Suggestions by Advisory Board

2

Facilitating access to grant

KPIs

% of applications successfully accepted during the next 3 years.

Connection with SNS (when applicable)

SNS #6 Access to finance

Final recommendations: Europe must present a coherent, competitive proposition to global talent.

1. **Integration of candidate countries** into the EU talent pipeline.
2. **Accelerated mobility schemes** (visa fast-tracks, qualification recognition) for critical sectors.
3. **Expanded access to grants** for international entrepreneurs and professionals.

Action #3 Talent retention and re-attraction

Description

The AB's proposals address the crucial challenge of not only attracting talent but also ensuring its long-term retention within Europe. By improving working conditions, supporting academia, and creating compelling career pathways, these measures aim to reduce brain drain, strengthen loyalty to European innovation ecosystems, and re-attract talent that may otherwise seek opportunities abroad.

1. Compensation and contractual conditions

Explanations and rationale: Fair and competitive compensation, along with favourable contractual conditions, is a decisive factor in retaining top talent. This action ensures that professionals feel valued and rewarded for their contributions, reducing incentives to leave for markets offering better pay or benefits. By addressing issues such as stock options[94] and transparent contractual practices, Europe enhances its appeal as a place where individuals can build sustainable and rewarding careers. This measure directly impacts both retention and re-attraction, as professionals who experience fair conditions are more likely to return to or remain within the European ecosystem.

National level

- Reform national labour laws and tax frameworks to make stock options (ESOPs) more attractive and accessible to employees in startups and scaleups.
- Ensure transparent and fair contractual conditions, particularly for young professionals and international hires, by enforcing clear standards on working hours, benefits, and pay equity.

[94] Note: ESOP is at the centre of SNS #3 Stock Options, for further information please visit Standards | ESNA

• Introduce tax incentives for companies that offer competitive salary packages linked to innovation-driven industries.
• Create public registries or certification schemes for "fair employer" practices, rewarding companies that provide high-quality contractual conditions.

EU level

• Advance the 28th Regime for ESOPs and startup equity, harmonising rules across Member States to reduce fragmentation and ensure fairness in employee ownership[95].
• Develop EU-wide guidelines for fair contractual standards, particularly in startups and SMEs, to reduce abuse of "precarious" contracts while maintaining flexibility.
• Through the European Labour Authority, monitor implementation of fair compensation practices and highlight best practices across Member States.
• Establish an EU Talent Retention Framework linking competitive compensation with broader initiatives on mobility, social protection, and recognition of skills.
• Integrate contractual fairness and ESOP reforms into the EU Startup and Scaleup Strategy KPIs, ensuring that talent-related measures are tracked and benchmarked across countries.
• Clarify and expand existing pan-European pension/benefit portability schemes to support career mobility across borders while ensuring social security rights remain intact[96].

2. Academia & talent retention

Explanations and rationale: The academic sector plays a vital role in nurturing and retaining talent. By strengthening opportunities for researchers, educators, and students, this initiative ensures that Europe can keep highly skilled individuals engaged within its knowledge economy. Supporting academic institutions also fosters collaboration with industry, creating pathways for career growth within Europe. This reduces the risk of losing talent to external opportunities and enhances Europe's attractiveness for returning scholars and professionals who may have gained experience abroad but are seeking stable and impactful career options back home.

National level

• Increase public investment in universities and research centres, ensuring competitive salaries, research budgets, and infrastructure, in keeping with the Choose Europe initiative.
• Create career development programmes for young researchers, including tenure-track positions, grants for early-stage

[95] See Europe Startup Nations Alliance. (2025, May). Building a competitive Europe: the role of startup and scaleup ecosystems. Volume I: Regulatory Barriers (Red Tape) (ESNA Compendium). Europe Startup Nations Alliance. https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.i-regulatory-barriers.pdf (page 60)

[96] Pan-European pension and benefit portability schemes face significant hurdles due to fragmented national systems, divergent legal frameworks, and complex administrative processes. Workers risk gaps or reductions in benefits when moving across borders, while limited awareness further undermines accessibility. Ensuring long-term sustainability and overcoming political reluctance remain critical to strengthening mobility while safeguarding social security rights.

projects, and mentoring networks[97].

- Share strong narratives of success stories of third-country talents, founders or researchers in Europe.
- Strengthen academia-industry partnerships, enabling researchers to collaborate with startups and scaleups while retaining academic positions.
- Offer tax incentives or subsidies for companies that co-fund PhD programmes, industrial doctorates, or joint research projects with universities.
- Introduce return fellowships to attract nationals who studied or worked abroad, offering funding and guaranteed positions in academia or research.

EU level

- Expand Marie Skłodowska-Curie Actions and ERC grants, ensuring more researchers can pursue long-term careers in Europe.
- Support European Universities Alliances to provide mobility, joint degrees, and collaborative research programmes that retain talent across borders.
- Align Horizon Europe with talent retention by creating dedicated tracks for early-career researchers and returnees seeking reintegration.
- Develop EU-wide fellowships and re-attraction schemes for European researchers currently abroad, with clear pathways into academia or industry.
- Promote cross-border academia-industry mobility frameworks, enabling researchers to work part-time in universities and part-time in startups or corporates without losing social protections.
- Include academic retention and re-attraction indicators – including ESNA's SNS #2 - in the EU Startup and Scaleup Strategy's monitoring framework, linking knowledge creation to entrepreneurship outcomes.
- Make entrepreneurship and startup creation part of a researcher's tenure to foster more interactions between startups and academics[98].

3. Building an attractive career vision for graduates across Europe

Explanations and rationale: Creating a compelling career vision for graduates is essential for retaining the next generation of talent. By ensuring that young professionals can clearly see viable opportunities in startups, established companies, and research environments, Europe reduces the outflow of graduates to other regions. This measure also supports re-attraction, as graduates who initially leave for international experience may be encouraged to return when they see strong, sector-driven opportunities in Europe. Furthermore, aligning career pathways with social inclusion and democratic values reinforces Europe's unique competitive advantage as a region where innovation and societal progress go hand in hand.

[97] Note: Tables Mentoring, Programmes supports (See Chapter III).

[98] This could be a mandatory requirement in performance contracts between ministries and public universities. It would then shift incentives beyond the current "publish or perish" logic that often prioritises academic output over innovation and the creation of spin-offs.

National level

- Develop national graduate career platforms that highlight opportunities in startups, scaleups, and research institutions, integrated with labour market data.
- Provide career guidance and mentoring services in universities and vocational schools, with strong links to innovation ecosystems.
- Offer tax incentives or subsidies for companies that hire recent graduates into high-demand or critical-industry roles.
- Introduce graduate innovation fellowships that allow young professionals to work jointly across academia, startups, and public sector projects.
- Support regional mobility schemes so graduates can access career opportunities outside their immediate city or region without financial barriers.

EU level

- Create an EU-wide Graduate Career Vision Framework, promoting transparent career pathways in critical industries and entrepreneurial ecosystems across Member States.
- Expand Erasmus+ and Erasmus for Young Entrepreneurs to include structured graduate career-entry programmes with placements in startups and scaleups.
- Establish a European Graduate Talent Portal showcasing opportunities in innovation-driven sectors across countries, linked to the EU Talent Pool.
- Provide EU co-funded graduate traineeships in critical industries, ensuring young professionals gain practical experience early in their careers.
- Monitor and publish Graduate Retention Indicators within the EU Startup and Scale-up Strategy, tracking the flow of graduates inside and outside Europe.
- Promote cross-border recognition of early-career experience, ensuring that internships, apprenticeships, and startup roles are fully valued across Member States.

Final recommendations: Retain and re-attract talent by making Europe a place to build sustainable careers and identities.

1.Promote a **European innovation identity** that links careers to societal progress.
2.Ensure **competitive conditions** (compensation, ESOP schemes, transparent contracts).
3.Strengthen **academia-industry bridges** (joint appointments, entrepreneurial PhDs).
4.Provide **clear career visions for graduates**, with mentoring and startup pathways.

Suggestions and Recommendations

1

Suggestions by Advisory Board

Compensation and contractual conditions

KPIs

number of companies offering competitive salary packages linked to innovation—driven industries.

number of Member States implementing the 28th Regime

Connection with SNS (when applicable)

SNS #3 Stock options

2

Suggestions by Advisory Board

Academia & talent retention

KPIs

number of academia-industry partnerships

number of return fellowships beneficiaries

Connection with SNS (when applicable)

SNS #2 Attracting and retaining talent

3

Suggestions by Advisory Board

Building an attractive career vision for graduates across Europe

KPIs

number of newcomers from universities that go to found their own startups or work at one.

Connection with SNS (when applicable)

SNS #2 Attracting and retaining talent

SNS #7 Social inclusion, diversity and protecting democratic values

Entrepreneurial Culture

Description

The AB emphasises the importance of cultivating a strong entrepreneurial culture across Europe. By promoting role models, enhancing education, fostering communities, and monitoring progress, these measures aim to create an ecosystem that not only encourages entrepreneurship but also sustains it as a driver of innovation and societal progress.

Recommended actions

1. Leveraging entrepreneurship through positive role models

Explanations and rationale: Highlighting successful entrepreneurs as role models inspire the next generation to pursue entrepreneurial pathways. By increasing the visibility of startup leaders and their impact, Europe can normalise entrepreneurship as a viable and respected career choice. This action supports inclusivity by showcasing diverse backgrounds and experiences, encouraging underrepresented groups to engage with entrepreneurship. Ultimately, role models provide both inspiration and practical insights, strengthening Europe's entrepreneurial identity.

National level

- Promote national campaigns showcasing diverse entrepreneurs as role models.
- Partner with media, schools, and industry to highlight success stories - moving beyond the 'unicorn' success narratives inspired by Silicon Valley and instead foster a distinctly European approach to entrepreneurship, aligning more closely with the 'zebra' model[99].
- Support mentorship programmes connecting local entrepreneurs with students and early-stage founders.
- Recognise role models via national awards or honours.

EU level

- Launch an EU-wide visibility campaign celebrating entrepreneurs across Member States (e.g. European Entrepreneurship Day).
- Integrate role models into Erasmus for Young Entrepreneurs and EU Startup & Scaleup events.
- Showcase diversity in entrepreneurship as part of EU inclusion strategies.
- Collect and share role-model case studies in a central EU platform.

2. Scaling and upgrading entrepreneurial education

Explanations and rationale: Expanding access to high-quality entrepreneurial education is critical to embedding entrepreneurial thinking at all levels of society. By scaling programmes and increasing participation, individuals gain the skills and confidence to start and grow businesses.

[99] The Zebra business model is a framework for building companies that are both profitable and socially responsible. Introduced in contrast to the unicorn model, zebra companies aim to be realistic, inclusive, ethical, and collaborative. Brandel, J., Zepeda, M., Scholz, A., & Williams, A. (2017). Zebras Fix What Unicorns Break. Zebras Unite. Retrieved from https://medium.com/zebras-unite/zebrasfix-c467e55f9d96

These initiatives also ensure that entrepreneurial competencies, such as resilience, problem-solving, and innovation, are developed broadly across Europe's workforce. Importantly, education that leads to startup creation enhances the sustainability of Europe's entrepreneurial pipeline.

National level

- Embed entrepreneurship modules in national curricula (schools, VET, universities).
- Fund national accelerator-linked education programmes (hands-on startup creation).
- Provide teacher training and resources for entrepreneurial learning.
- Partner with private sector for practical case studies and internships.

EU level

- Expand Erasmus+, Digital Europe, Horizon Europe funding for entrepreneurship education.
- Further develop the EntreComp[100] as an EU entrepreneurial curriculum framework to guide Member States.
- Support cross-border entrepreneurial schools and joint programmes.
- Benchmark participation rates and impact of entrepreneurial education across Europe.

[100] Joint Research Centre. (n.d.). EntreComp: The entrepreneurship competence framework. European Commission. Retrieved October 1, 2025, from https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en

3. Strengthening Communities, Peer-Networks, and Knowledge Transfer

Explanations and rationale: Entrepreneurship thrives in environments where collaboration, mentorship, and shared learning are prioritised. Strengthening networks and communities provides entrepreneurs with access to resources, investors, and peers who can support their journey. This creates an ecosystem where knowledge flows freely, and both successes and failures are leveraged for collective growth. Building strong communities ensures that Europe's entrepreneurial culture is not fragmented but cohesive and supportive across regions and sectors.

National level

- Fund and support local startup hubs, incubators, and peer-networks.
- Encourage public–private co-working spaces and mentoring platforms.
- Invest in regional networking events that connect entrepreneurs, investors, and academia.
- Promote knowledge transfer between regions and industries nationally.

EU level

- Build an EU Entrepreneurial Communities Network linking hubs across countries, akin to the European Startup & Scaleup Hubs mentioned in the EU Startup and Scaleup Strategy,
- Support cross-border mentoring and

peer-learning programmes.

4. Measuring Europe's entrepreneurial culture

Explanations and rationale: Establishing a Europe-wide mechanism to monitor entrepreneurial culture akin to the GEM – however more EU and startup-centred - ensures accountability and progress. By systematically measuring entrepreneurial activity, attitudes, and outcomes, Europe gains valuable insights into strengths, weaknesses, and areas for improvement. By focusing on issues specific to Europe such as mobility, relocation, critical industries or investment, this monitoring tools would provide exploitable data to support informed policymaking and continuous improvement, ensuring that entrepreneurial culture remains a dynamic and evolving asset.

National level

- Conduct national surveys and monitoring on entrepreneurial attitudes, participation, and barriers.
- Establish national entrepreneurship observatories linked to statistical offices.
- Use KPIs to track regional differences (at NUTS - Nomenclature of territorial units for statistics level) in entrepreneurial activity.
- Report findings annually to policymakers and the public.

EU level

- Develop an EU Entrepreneurial Culture Index, measuring activity, attitudes, and ecosystem quality across Member States.
- Use Eurostat, CEDEFOP, GEM and OECD collaboration for comparable datasets.
- Align measurements with broader EU competitiveness and skills dashboards.
- Seek potential synergies with the existing SNS Report, European Innovation Scoreboard and envisioned European Startup and Scaleup Scoreboard.

Suggestions and KPIs

1

Main action suggested by Advisory Board

Leveraging entrepreneurship through positive role models

KPIs

# of startup role modelling prizes in the next 3 years.

Connection with SNS (when applicable)

SNS #7 Social inclusion, diversity and protecting democratic values

2

Main action suggested by Advisory Board

Scaling and upgrading entrepreneurial education

KPIs

# of entrepreneurial programmes.
# of participants.
# of participants that end up creating their startups.

3

Main action suggested by Advisory Board

Strengthening communities, peer-networks, and knowledge transfer

KPIs

# of mentorship and investors training programmes.

4

Main action suggested by Advisory Board

Measuring Europe's entrepreneurial culture

KPIs

Europe-wide monitoring mechanism created in 2 years.

VI. Final recommendations

Talent and entrepreneurial culture are the foundations of Europe's competitiveness. Europe's distinctive advantage lies in combining competitiveness with cohesion: aligning skills with critical industries, fostering resilience through entrepreneurship, and anchoring innovation in European values.

For Europe to secure not just growth but a sustainable, inclusive, and sovereign innovation ecosystem, four priority actions should advance in parallel:

1. Reskilling & Lifelong Learning

- Scale EU and national programmes to systematically retrain workers for critical industries (deep tech, clean tech, health, AI).
- Embed entrepreneurial competencies, resilience, creativity and problem-solving, into all levels of education and training.
- Ensure skills anticipation systems are connected to startup and scaleup needs, not only large corporate demand.

2. Attraction of Global & Intra-EU Talent

- Build a 28th Regime for talent to streamline visas, mobility, and recognition of qualifications across Europe.
- Enhance ESOP frameworks to attract and retain entrepreneurial talent through competitive ownership models.
- Position Europe as a global hub by connecting with diaspora communities and international entrepreneurs.

3. Retention & Scale-Up Readiness

- Foster startup-friendly labour and tax regimes to reduce talent leakage.
- Increase access to growth-stage skills (C-suite, regulatory, industrial scaling) via the EIC Scaling Club and other EU initiatives.
- Strengthen university-to-startup pipelines, incentivising researchers and engineers to remain in Europe.

4. Cultural Change & Entrepreneurial Identity

- Promote entrepreneurship as a respected career path through role models, storytelling, and recognition of diverse founders.
- Support peer networks and community infrastructures that democratise access to mentoring and knowledge.
- Anchor Europe's innovation model in values of inclusion, sustainability, and sovereignty, making entrepreneurship a driver of cohesion.

Roadmap suggestion for implementation

The following roadmap outlines an action plan to implement the previous suggestions for fostering talent and entrepreneurial culture in the European ecosystem. Spanning across four years, it offers a balanced and tailored process.

YEAR 1 (2026) Mapping & mobilising

Theme Understanding Europe's talent and entrepreneurial realities

Objectives Build shared intelligence, identify key skills gaps, and map existing initiatives.

Talent

- Mapping Europe's skills needs
  - Conduct EU-wide survey on startup skills demand (digital, green, leadership)
  - Develop a Talent Dashboard integrating labour data & founder profiles

Deliverables Skills gap report; interactive EU talent map

- Building opportunities for specific target groups
  - Identify underrepresented founders (women, migrants, regional innovators)
  - Launch pilot Founder Labs in five Member States

Deliverables 50 pilot startups trained

- Freelancer economy scoping
  - Policy paper on freelancer rights, taxation & social protection

Deliverables EU freelancer framework proposal

Entrepreneurial Culture

- Baseline assessment
  - Collect existing entrepreneurial education programmes & role-model initiatives based on ESNA's Best Practices Catalogue

Deliverables Update of ESNA's Best Practices Catalogue

- Community Engagement
  - Map national startup communities & peer networks

Deliverables Community Map

YEAR 2 (2027) Building structures & scaling models

Theme: From knowledge to infrastructure

Talent

- Talent attraction mechanisms
  - Design a Startup mobility visa package for EU candidate countries
  - Create fast-track grant access portal for foreign talent

Deliverables Startup mobility visa package prototype validated with three countries

- Academic partnership scheme
  - Pilot mobility programmes between universities & startups

Deliverables 30 university-startup placements

Entrepreneurial Culture

- Entrepreneurial education scaling
  - Launch open curriculum for secondary and higher education

Deliverables EU Curriculum Toolkit v1

- Role-model Initiative
  - Produce 10 European founder stories (short films and case studies)

Deliverables Campaign “Europe’s everyday entrepreneurs”

YEAR 3 (2028) Integration & Acceleration

Theme: Connecting systems and accelerating mobility

Talent

- Talent Mobility Acceleration
  - Implement EU-wide Mobility Pass for founders and researchers

Deliverables ESNA’s Opportunity Hub update

- Reskilling & upskilling at scale
  - Fund regional training centres for AI, green transition, and digital leadership
  - Launch “train the trainer” programme for ecosystem builders

Deliverables 1,000 ecosystem leaders trained

- Retention & re-attraction scheme
  - Introduce European re-attraction fellowship for diaspora talent

Deliverables 200 fellows re-integrated in EU startups

Entrepreneurial Culture

- Strengthening communities
  - Connect local founder communities

Deliverables “Europe Builds Together” network operational

- Knowledge transfer mechanism
  - Create cross-border peer learning platform for policymakers

Deliverables ESNA peer-learning hub

YEAR 4 (2029) Measuring impact & embedding change

Theme: Embedding Europe’s talent & entrepreneurial culture as a global advantage

Talent

- Retention & re-attraction outcomes
  - Evaluate impact of fellowship and mobility schemes

Deliverables Talent impact report

- European Identity Campaign
  - Large-scale communication

initiative on “Europe as a Career Destination” building up “Choose Europe”

Deliverables Pan-EU media campaign; 500 success stories collected

Entrepreneurial Culture

- Measurement and benchmarking
  - Update Entrepreneurial culture index and assess progress

Deliverables Index report 2029

- Institutional embedding
  - Integrate entrepreneurship modules into EU education

Deliverables Mainstreaming guidelines for DG EDU and DG REGIO

Final outcomes (end of 2029)

- Fully operational Talent and Mobility Platform
- Established network of entrepreneurial education programmes
- ESNA Entrepreneurial Culture Index institutionalised as an EU monitoring tool
- 5,000+ individuals trained or supported via Talent programmes
- Shared European Identity campaign positioning Europe as a leader in talent sovereignty

Conclusions

Europe is now at a crossroads – with a vibrant startup ecosystem but at risk of losing a worldwide race. While it overcame many challenges thanks to its collaborative mindset and by embracing its diversity, competitiveness is now one of the key pillars of the EU's present and future.

Entrepreneurship goes beyond business creation, it implies a culture of risk management, flexibility and resilience. Europe, with its industrial legacy, has the ability to turn itself into the world's most thriving startup ecosystem when adding the right amount of flexibility to an already collaborative environment. Additionally, the EU can grow its talent pool by developing the existing one and utilising Europe's way of life to attract smart third-country nationals. The strong scientific framework and great number of startup hubs would undoubtedly support these efforts.

With the unveiling of the EU Startup & Scaleup Strategy, the EU reiterated its intention to enhance and expand the current ecosystem. This milestone adds up to previous efforts such as the tools offered by the EIC to startups. Funding instruments such as Horizon Europe are another testament to the continent's continuous pursuit of excellence (exemplified by the ERC) and a fast-changing world (via regular work programmes updates).

As indicated throughout these chapters, there are numerous existing policies implemented at a national level that aim to bolster entrepreneurial culture and talent. This demonstrates the Member States' efforts to tend to and nurture a blooming ecosystem, steering measures towards the right direction. As a spillover effect, they may inspire other countries should these initiatives prove successful.

ESNA's AB and Partners played an instrumental role in steering our team towards the right direction by sharing personal experiences, business cases and studies. Coming from various backgrounds and countries, they are all moved by a willingness to make Europe a better place to start and scale a business.

ESNA's role lies in fostering startup-friendly policies, notably by activating knowledge sharing across Member States, eventually leaning towards harmonisation. By offering concrete solutions to boost entrepreneurial culture and support talents, this Volume adopts a practical approach. From role modelling, education to community in entrepreneurial culture, to skills, talent retention and (re)attraction, this document encompasses a wide array of solutions.

Europe must treat talent and entrepreneurial culture as a strategic asset on par with capital and infrastructure. A coherent EU-level framework, combined with national action, should align reskilling, attraction, retention, and cultural change in a mutually reinforcing way. By doing so, Europe can transform its innovation ecosystem into one that safeguards sovereignty, inclusiveness, and long-term resilience, making entrepreneurship and talent the true backbone of European competitiveness.

Sources

2023 Eurobarometer

Atomico. 2024. State of European Tech 2024 [Executive summary]. London: Atomico.
https://www.stateofeuropeantech.com/chapters/executive-summary

Bhalla, V. 2023. Can Europe's deep tech flywheel rival the U.S. for startup exits? Experts say yes, here's how. Tech Funding News. Retrieved September 12, 2025 from
https://techfundingnews.com/can-europes-deep-tech-flywheel-rival-the-u-s-for-startup-exits-experts-…

Borbon, Y., Moreno, C., & Markianidou, P. 2023. Monitoring industrial ecosystems: Energy – Renewables. Analytical report. Brussels: Technopolis Group.
https://monitor-industrial-ecosystems.ec.europa.eu/sites/default/files/2023-12/EMI%20Renewable%20in…

Brandel, J., Zepeda, M., Scholz, A., & Williams, A. 2017. *Zebras fix what unicorns break.* Portland: Zebras Unite. Retrieved from
https://medium.com/zebras-unite/zebrasfix-c467e55f9d96

Brownson, C. D. 2013. Fostering entrepreneurial culture: A conceptualization. European Journal of Business and Management 5(31): 146–155.

BST Europe. 2025. From fragmentation to strategy: Building a smart European Competitiveness Fund – Recommendations. Brussels: BST Europe.
https://bst-europe.eu/competitiveness-innovation/recommendations-european-competitiveness-fund/

Cedefop – European Centre for the Development of Vocational Training. n.d. Compass: Skills anticipation system. Thessaloniki: Cedefop. Retrieved September 2025 from
https://www.cedefop.europa.eu/en/tools/matching-skills/all-instruments/compass-skills-anticipation-…

Coste, O. 2023. Europe, Tech and War. Paris: Independent publication.

Cultures and Organizations: Software of the Mind by Geert Hofstede & Gert Jan Hofstede

Dealroom, Lakestar, & Walden Catalyst. 2025. The European Deep Tech Report 2025. Amsterdam: Dealroom.
https://dealroom.co/uploaded/2025/03/2025_Dealroom-Deeptech-Report.pdf

Dealroom. 2023. Europe Tech Report 2023. Amsterdam: Dealroom.
https://dealroom.co/reports/europe-tech-report-2023

Dealroom. 2025. *Accelerating Europe – Part 1 of 3: The state of European innovation and why it matters.* Amsterdam: Dealroom.
https://dealroom.co/uploaded/2025/02/Accelerating-Europe-Dealroom.pdf

Dealroom. 2025. *Deep Tech Europe.* Amsterdam: Dealroom.
https://dealroom.co/guides/deep-tech-europe

Dealroom.co. 2025. *Accelerating Europe: The state of European innovation and why it matters* [Report]. Amsterdam: Dealroom.
https://dealroom.co/reports/accelerating-europe

Delanote, J., & Zeppi, M. 2023. *EIB Investment Survey 2023: European Union overview.* Luxembourg: European Investment Bank.
https://www.eib.org/attachments/lucalli/20230285_econ_eibis_2023_eu_en.pdf

Draghi, M. 2024. *The future of European competitiveness.* Brussels: European Commission.
https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en

ETF — European Training Foundation. n.d.

Recognition of your higher education diploma. Turin: ETF. Retrieved September 2025 from
https://www.etf.europa.eu/et/faqs/recognition-your-higher-education-diploma

European Commission & OECD. n.d. *HEInnovate: Supporting innovation in higher education.* Brussels: European Commission.
https://heinnovate.eu/en

European Commission. 2020. *VET skills for today and for the future.* Luxembourg: Publications Office of the European Union.
https://op.europa.eu/webpub/empl/VET-skills-for-today-and-future/en/

European Commission. 2021. *Erasmus+: Over €28 billion to support mobility and learning (IP/21/1326).* Brussels: European Commission.
https://ec.europa.eu/commission/presscorner/detail/en/ip_21_1326

European Commission. 2023. *Harnessing talent in Europe's regions (COM(2023)32 final).* Brussels: European Commission.
https://ec.europa.eu/regional_policy/sources/communication/harnessing-talents/harnessing-talents-re…

European Commission. 2023. *Commission report finds labour and skills shortages persist and looks at possible ways to tackle them (IP/23/3704).* Brussels: European Commission.
https://employment-social-affairs.ec.europa.eu/news/commission-report-finds-labour-and-skills-short…

European Commission. 2025. *Questions and answers: A competitiveness strategy for Europe – Report by Mario Draghi* [Press release]. Brussels: European Commission. Retrieved September 12, 2025 from
https://ec.europa.eu/commission/presscorner/detail/en/qanda_25_803

European Commission. 2025. *Choose Europe: Advance your research career in the EU.* Brussels: European Commission.
https://commission.europa.eu/topics/research-and-innovation/choose-europe_en

European Commission. 2025. Savings and investments union: Better financial opportunities for EU citizens and businesses [Press release]. Brussels: European Commission.
https://ec.europa.eu/commission/presscorner/detail/en/ip_25_1875

European Commission. 2025. EU Startup and Scaleup Strategy: Choose Europe to start and scale. Directorate-General for Communication. Brussels: European Commission.
https://research-and-innovation.ec.europa.eu/strategy/strategy-research-and-innovation/jobs-and-eco…

European Commission. n.d. Entrepreneurial culture (B5). Erasmus+ Project Results. Brussels: European Commission. Retrieved September 12, 2025 from
https://ec.europa.eu/programmes/erasmus-plus/project-result-content/02d106a1-ed06-4e42-bfcf-dda5ce7…

European Commission. n.d. European Monitor of Industrial Ecosystems. Brussels: European Commission. Retrieved September 2025 from
https://monitor-industrial-ecosystems.ec.europa.eu

European Commission. n.d. European skills agenda. Directorate-General for Employment, Social Affairs & Inclusion. Brussels: European Commission. Retrieved September 12, 2025 from
https://employment-social-affairs.ec.europa.eu/policies-and-activities/skills-and-qualifications/eu…

European Commission. n.d. *Factsheet: EU financial literacy strategy.* Directorate-General for Financial Stability, Financial Services and Capital Markets Union. Brussels: European

Commission.

https://finance.ec.europa.eu/consumer-finance-and-payments/financial-literacy/factsheet-eu-financia…

European Commission. n.d. *Financial literacy.* Directorate-General for Financial Stability, Financial Services and Capital Markets Union. Brussels: European Commission.

https://finance.ec.europa.eu/consumer-finance-and-payments/financial-literacy_en

European Commission. n.d. *Savings and investments union.* Directorate-General for Financial Stability, Financial Services and Capital Markets Union. Brussels: European Commission.

https://finance.ec.europa.eu/savings-investments-union_en

European Commission: European Innovation Council and SMEs Executive Agency. 2025. *Unlocking innovation through corporate-startup collaboration – The EIC Corporate Partnership Programme.* Brussels: Publications Office of the European Union.

https://data.europa.eu/doi/10.2777/xxxxxx

European Innovation Council & SMEs Executive Agency. 2025. *Commission doubles down on startups with new strategy and EIC expansion.* Brussels: European Commission.

https://research-and-innovation.ec.europa.eu/news/commission-doubles-down-startups-new-strategy-and-eic-expansion_en

Feld, B. 2012. Startup communities: Building an entrepreneurial ecosystem in your city. Hoboken, NJ: John Wiley & Sons.

GEM (Global Entrepreneurship Monitor). 2025. *Global Entrepreneurship Monitor 2024/2025 Global Report: Entrepreneurship reality check.* London: GEM. ISBN 978-1-0683369-8-0.

Hammer, T., & Siegfried, P. 2023. *Implications of financial literacy on entrepreneurship. Audit Financiar* 21: 194–208. DOI: 10.20869/AUDITF/2023/169/007.

Joint Research Centre. n.d. *Digital Competence Framework for Citizens (DigComp).* Brussels: European Commission. Retrieved October 1, 2025 from

https://joint-research-centre.ec.europa.eu/projects-and-activities/education-and-training/digital-t…

Joint Research Centre. n.d. *EntreComp: The entrepreneurship competence framework.* Brussels: European Commission. Retrieved October 1, 2025 from

https://joint-research-centre.ec.europa.eu/entrecomp-entrepreneurship-competence-framework_en

Kraus, S., Meier, F., & Niemand, T. 2025. *GEM Austria: 2024/25 National Report (Full Version).* Vienna: Global Entrepreneurship Monitor Austria / GEM Consortium. Retrieved from

https://www2.gemconsortium.org/report/gem-20242025-austria-national-report-full-version

Lakestar. 2025. European Deeptech Report 2025. Zurich: Lakestar.

https://lakestar.com/news/2025-european-deeptech-report

Letta, E. 2024. Much more than a market: Speed, security, solidarity. Empowering the Single Market to deliver a sustainable future and prosperity for all EU citizens [Report]. Brussels: European Council / European Commission.

Metler, A. 2025. Europe's inability to scale start-ups could be disastrous. Financial Times, June 11.

https://www.ft.com/content/cb86d8aa-03bc-4918-938f-28dbde5d2b5e

NovaSpace. 2024. *Earth Observation Data & Services Market, 17th Edition.* Paris: NovaSpace.

O'Hear, S. 2023. *Klarna: The founder factory. Sifted,* June 7. Retrieved September 12, 2025

from

https://sifted.eu/articles/klarna-founder-factory

Rossi, C., & Jordao, A. 2024. EU startup ecosystem: Driving change, past, present and future – How and why we should all act together. Brussels: Europe Startup Nations Alliance (ESNA). Retrieved September 12, 2025 from

https://backoffice.esnalliance.eu/multimedia/esna/esna-compendium-1.pd

Rossi, C., & Desoche, M. 2025. Building a competitive Europe: The role of startup and scaleup ecosystems — Volume II: Investment. Brussels: Europe Startup Nations Alliance (ESNA).

https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.ii-investment.p…

Rossi, C., Desoche, M., & Macedo Pinto, P. 2025. Building a competitive Europe: The role of startup and scaleup ecosystems — Volume I: Regulatory barriers (red tape). Brussels: Europe Startup Nations Alliance (ESNA).

https://backoffice.esnalliance.eu/multimedia/esna/building-a-competitive-europe-vol.i-regulatory-ba…

Schumpeter, J. A. 1942. Capitalism, socialism and democracy. New York: Harper & Brothers.

Siota, J., Kowszyk, Y., & Prats, M. J. 2025. *European deep tech scaleups: Leadership and talent development (Scaleup Series).* Barcelona: IESE Business School.

https://www.iese.edu/media/research/pdfs/78602.pdf

Soler, P., & Schickler, J. 2024. Draghi's report on EU competitiveness: Five key takeaways. Euronews, September 9.

https://www.euronews.com/my-europe/2024/09/09/draghis-report-on-eu-competitiveness-five-key-takeawa…

Sternberg, R., Täube, F., Wallisch, M., Schauer, J., Gorynia Pfeffer, N., & Baharian, A. et al. 2023. *GEM Germany: Entrepreneurship rates rise to record highs (GEM Germany National Report findings).* Hannover: Leibniz Universität Hannover / GEM Consortium. Retrieved from

https://www.gemconsortium.org/news/entrepreneurship-rates-rise-to-record-highs-in-germany

Testa, G., Compano, R., Correia, A., & Rückert, E. 2022. In search of EU unicorns – What do we know about them? JRC Technical Report EUR 30978 EN, JRC127712. Luxembourg: Publications Office of the European Union.

https://publications.jrc.ec.europa.eu/repository/bitstream/JRC127712/JRC127712_01.pdf

The future of European competitiveness – Part A: *A competitiveness strategy for Europe.* 2024. Mario Draghi. Brussels: European Commission.

https://commission.europa.eu/document/download/97e481fd-2dc3-412d-be4c-f152a8232961_en

Van Gelderen, M., Wiklund, J., & McMullen, J. S. 2021. Entrepreneurship in the future: A Delphi study of ETP and JBV editorial board members. Entrepreneurship Theory and Practice 45(5): 1098–1125.

https://journals.sagepub.com/doi/10.1177/10422587211010503

Acronyms

AB | Advisory Board
AI | Artificial Intelligence
CEDEFOP | European Centre for the Development of Vocational Training
CMU | Capital Markets Union
DigComp | Digital Competence Framework for Citizens
DG | Directorate General
EBO | Established Business Ownership
EC | European Commission
ECF | European Competitiveness Fund
EESSI | Electronic Exchange of Social Security Information
EIB | European Investment Bank
EIC | European Innovation Council
EIF | European Investment Fund
EIT | European Institute of Innovation and Technology
ELA | European Labour Authority
EntreComp | Entrepreneurship Competence Framework
EQF | European Qualifications Framework
ERA | European Research Area
ESF+ | European Social Fund Plus
ESNA | Europe Startup Nations Alliance
ESOP | Employee Stock Ownership Plan
ETF | European Training Foundation
EU | European Union
EURES | European Employment Services
ERC | European Research Council
ESCO | European Skills, Competences, Qualifications and Occupations
FP | Framework Programme
GDPR | General Data Protection Regulation
GEM | Global Entrepreneurship Monitoring
HEI | Higher Education Institutions
ICT | Information and Communications Technology
IP | Intellectual Property
IPA | Instrument for Pre-accession Assistance
IPO | Initial Public Offering
JRC | Joint Research Centre
KPI | Key Performance Indicator
MFF | Multiannual Financial Framework
OECD | Organisation for Economic Co-operation and Development
R&D | Research & Development
R&I | Research & Innovation
RRF | Recovery and Resilience Facility
RRP | Recovery and Resilience Plan
SIU | Savings and Investment Union
SME | Small and Medium Enterprise
SNS | Startup Nations Standard
STEM | Science, Technology, Engineering, Mathematics
TEA | Total early-stage Entrepreneurial Activity
TFEU | Treaty on the Functioning of the European Union
US | United States
VC | Venture Capital
VET | Vocational Education and Training