Growth Capital for **Deep-Tech Scaleups**

Financing Innovation in Germany and Europe

“Germany needs to rediscover confidence and courage in its own innovative capacity.
We must once again be willing to invest our capital and our time in the future of our economy!”

- Prof. Dr. Helmut Schönenberger
Co-Founder and CEO, UnternehmerTUM **-**

“Germany is home to excellent deep-tech start-ups with highly promising solutions. What these companies lack, however, is growth capital to scale their ideas. Policymakers must now create the right framework conditions and incentives for more growth capital, businesses must invest with a long-term, future-oriented perspective, and institutional investors must allocate more capital. We know where action is needed—now we need the courage to implement the necessary measures together.”

- Prof. Dr. Ing. Dr. Sabine Kunst
Chair of the Executive Board , Joachim Herz Foundation **-**

Executive Summary

Germany faces a critical challenge:

Despite internationally leading research, the commercialisation of innovation remains limited. While Germany ranks among the global leaders in both basic and applied research, start-ups and Scaleups often lack the financial resources and capabilities required to translate technological breakthroughs into market-ready products and scalable business models– and to succeed globally.

Capital-intensive deep-tech spin-offs, which require substantial investment in research and development, prototyping, and production infrastructure, face significant financing barriers in particular. Traditional venture capital funds quickly reach their limits when it comes to hard-ware- and technology-intensive innovations. Private equity and infrastructure investors tend to avoid early growth stages, as technological, market, and operational uncertainties do not align with their risk–return profiles.

Bank financing also remains largely inaccessible for start-ups and Scaleups in the growth phase. Young companies rarely have robust balance sheets or sufficient collateral, while banks act cautiously due to regulatory requirements and conservative risk policies.

These structural bottlenecks in access to growth capital prevent German deep-tech start-ups and Scaleups from producing their technological solutions at scale and becoming inter-nationally competitive. Without targeted support, there is a risk that cutting-edge research will remain underutilized and that Germany will lose technological competitiveness.

This white paper, Growth Capital for Deep-Tech Scaleups: Financing Innovation in Germany and Europe, addresses these challenges.

The objective is to systematically analyze the financing gap facing German Scaleups and to develop concrete policy recommendations to strengthen the ecosystem. UnternehmerTUM, Europe's largest center for innovation and entrepreneurship, contributes extensive expertise in supporting start-ups and Scaleups as well as in developing new financing models. The Joachim Herz Foundation promotes science, research, and education, with a particular focus on translating academic research into entrepreneurial ventures. Working in close partnership, the Organisations outline pathways to narrow the gap between research and commercialisation and to pave the way for sustainable growth solutions in Germany.

Approach and Methodology

Our analysis of the financing gap and its underlying causes is based on a combined review of academic literature, practitioner studies, and initiatives from the start-up ecosystem, as well as expert interviews within the German start-up financing landscape. In particular, we examine both existing and emerging initiatives aimed at closing the growth financing gap and derive concrete recommendations for action. The methodological building blocks include in particular:

- Presentation of successful financing pathways and an illustrative comparison of different financing models
- Synthesis of expert interviews with investors, founders of start-ups and Scaleups, as well as experts from the broader ecosystem

The focus of this analysis is the targeted strengthening of growth capital for deep-tech Scaleups in Germany. The intended audience of this white paper includes policymakers, capital providers such as venture capital funds, foundations, family offices, and institutional investors, as well as business associations and relevant media stakeholders.

Building on existing initiatives, the white paper Growth Capital for Deep-Tech Scaleups: Financing Innovation in Germany and Europe aims to support the implementation of effective measures to close the financing gap for deep-tech Scaleups in Germany—both in terms of substance and communication.

Disclaimer:
This white paper draws on a wide range of recent studies and initiatives but does not claim to be exhaustive.

Content

UnternehmerTUM

Europe’s leading center for innovation and entrepreneurship

UnternehmerTUM is a unique platform for the development of innovation. The center provides comprehensive support to start-ups and Scaleups – from the initial idea through to an initial public offering. A team of more than 500 professionals supports founders in company formation, market entry, and financing, including venture capital.

UNTER
NEHMER
TUM

Founded in 2002 by entrepreneur Susanne Klatten, the non-profit UnternehmerTUM GmbH is today Europe’s leading center for start-ups and innovation. Each year, more than 100 high-growth technology start-ups emerge from UnternehmerTUM, including Celonis, Konux, and Isar Aerospace.

Joachim Herz Foundation

The Joachim Herz Foundation is committed to promoting innovation and the transfer of excellence research into practice, ensuring that more research outcomes generate tangible societal benefits.

The foundation strengthens entrepreneurial ecosystems and supports a new generation of entrepreneurial talent in developing radical innovations and sustainable business models. By fostering young professionals in a labour market shaped by artificial intelligence and digital transformation, the foundation contributes to the renewal of vocational education and training.

Its objective is to enable effective solutions to pressing challenges such as climate protection, increased resource efficiency, and the safeguarding of a skilled workforce.

The foundation's activities draw on impulses from the United States and actively promote transatlantic dialogue. Founded in 2008 in Hamburg, the Joachim Herz Foundation is one of Germany's major foundations.

Joachim Herz Stiftung

Learning & Exchange Center

University-affiliated start-up centers play a crucial role in strengthening young companies by providing infrastructure, mentoring, and access to networks. To support these structures in a targeted manner, the Federal Ministry for Economic Affairs and Energy has launched the flagship competition "Startup Factories". The objective is to expand university-affiliated, privately organized, and entrepreneurially led start-up centers that act as incubators for innovation and growth.

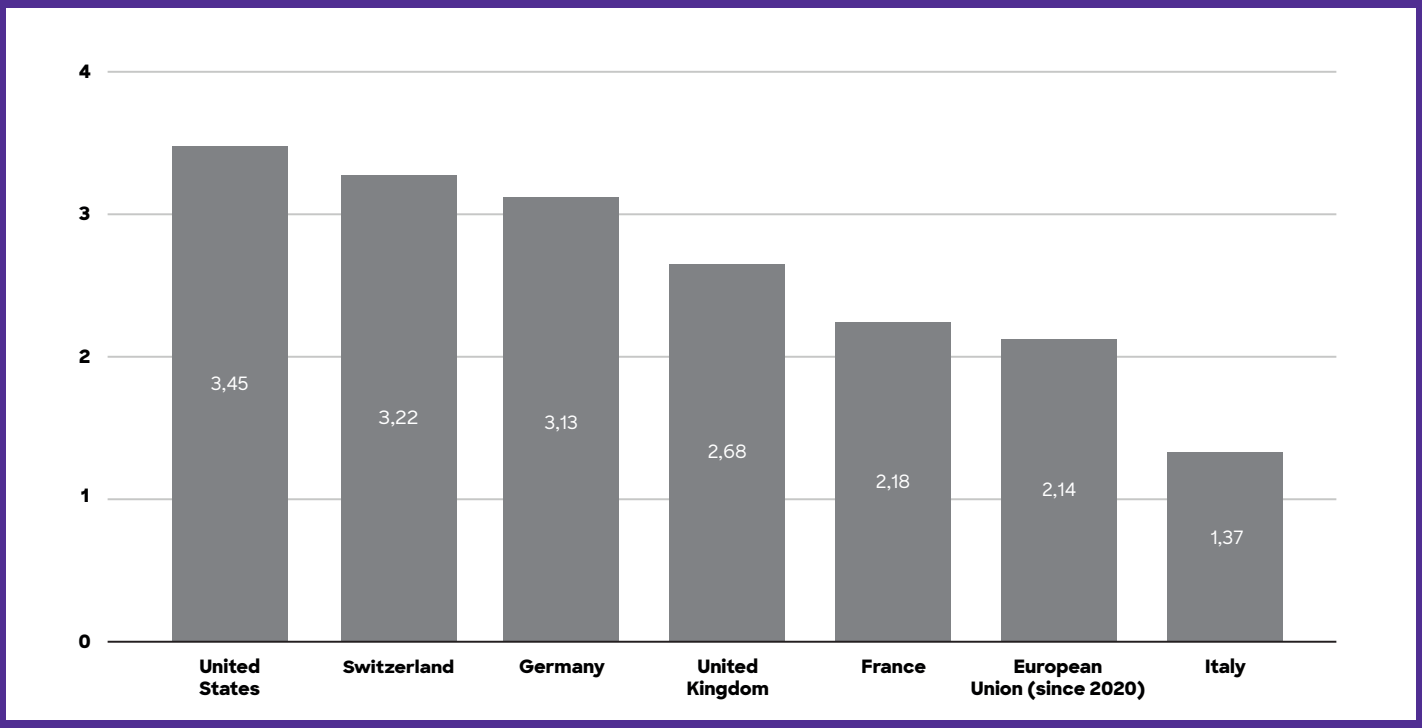
To support this initiative, UnternehmerTUM and the Joachim Herz Foundation founded the Learning and Exchange Center for Innovation and Entrepreneurship Practice (LEC) in 2024—together with partners such as the Boston Consulting Group, the Stifterverband, the Federal Ministry for Economic Affairs and Energy (BMWE), the Startup Association, and the Baden-Baden Entrepreneur Talks.

1.0 Challenging Financing Environment in the EU and Germany

Germany is among the world's leading locations for research and development. In 2023, R&D expenditure amounted to **3.13%** of gross domestic product, and according to the Global Innovation Index 2025, **seven German innovation clusters** rank among the global top 100 (World Intellectual Property Organisation 2025). Germany therefore possesses an excellent scientific foundation (OECD n.d.).

Despite this strength, commercial implementation has so far fallen short of expectations. This pattern—often referred to as the **"innovation paradox"** – is particularly evident among capital-intensive deep-tech start-ups and Scaleups, whose long development cycles and high financing requirements exceed the capacities of traditional financing models. This challenge is European in nature. A strong research base is confronted with an **Industrialisation gap** that slows the transfer of R&D outcomes into large-scale production. Especially in strategic sectors such as hydrogen, battery technology, and industrial decarbonization, a structural financing gap in the **double-digit billions** hinders the rapid build-up of production capacity (Cleantech for Europe 2024).

Gross Domestic Expenditure on Research and Development (GERD) as a Percentage of GDP, 2023
Source: OECD (n.d.)



1.1 The Central Challenge: The Growth-Stage Financing Gap

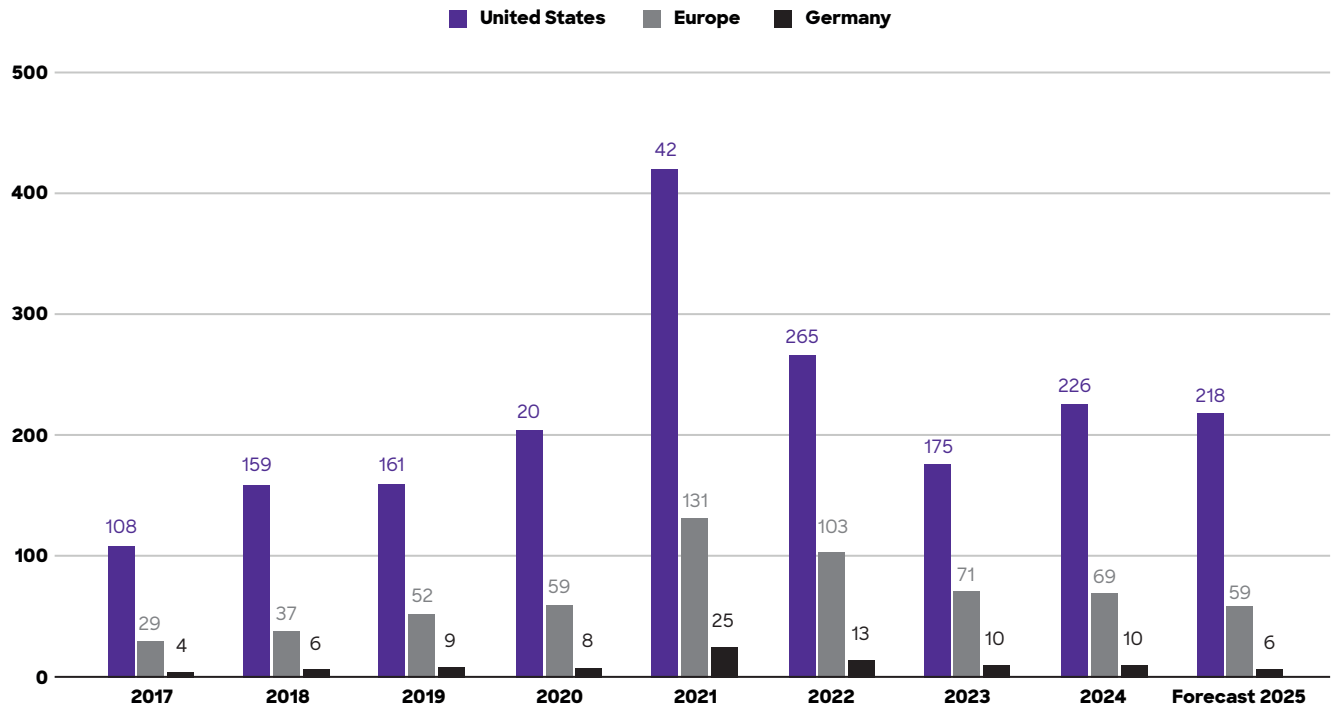
In its Start-up and Scaleup Strategy, the European Union identifies two central barriers facing start-ups: first, the translation of research into market-ready products; and second—particularly pronounced in Europe—**the scaling of proven business models.** The latter represents the decisive bottleneck in the European innovation ecosystem (European Commission 2025).

This **scaling gap emerges at the transition** from start-up to Scaleup. Once **product-market fit** has been achieved, companies require substantial growth capital to accelerate production, sales, and internationalisation. It is precisely this type of capital that is often insufficiently available in Europe, resulting in delayed expansion, lower market shares, and increased incentives for relocation (Berghoffer 2024).

Germany and Europe Compared to the United States

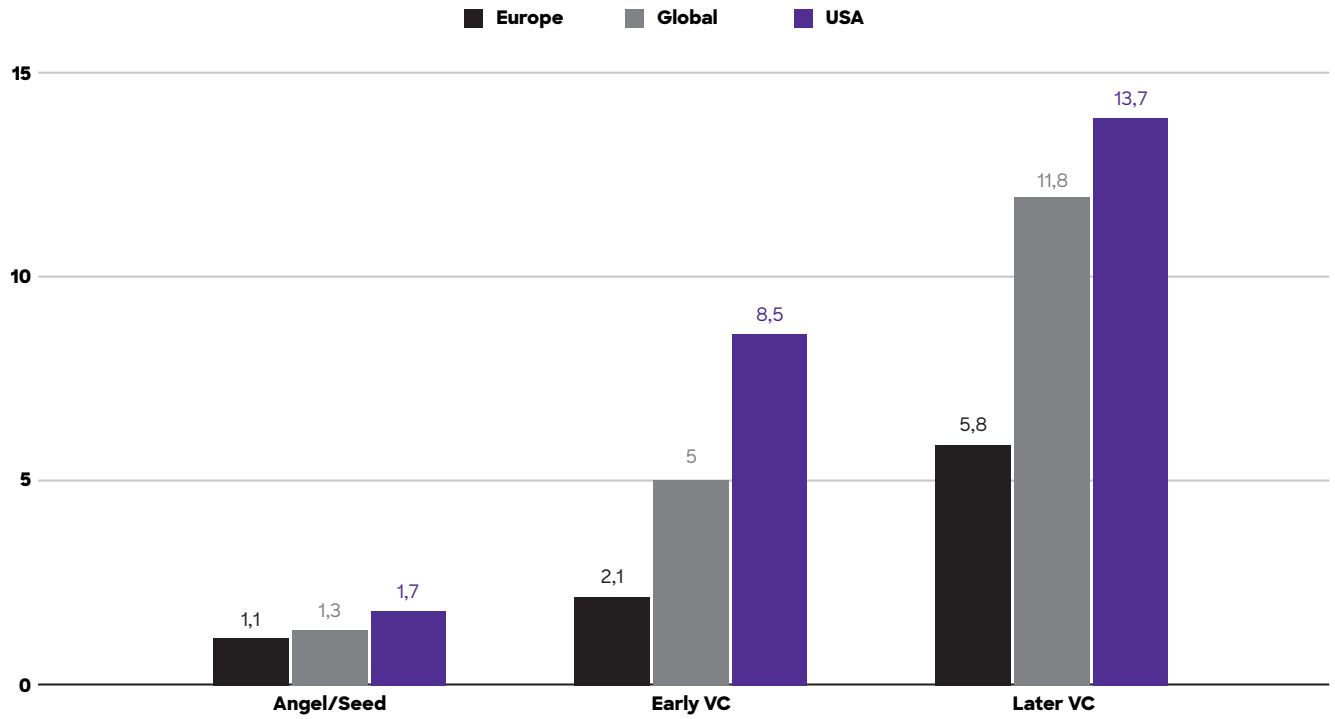
The available data underscores this deficit clearly. After reaching a record high of USD 24.7 billion in 2021, German venture capital investment declined to USD 9.8 billion in 2023. By contrast, venture capital investment in the United States alone amounted to USD 419.5 billion in 2021—more than 17 times the German figure (Dealroom n.d.).

VC Investments in USD (bn)
Source: Dealroom (n.d.)



The gap is particularly critical in the later growth stages—especially Series B and C—when Scaleups require large financing volumes to evolve into globally competitive players.The disparity is already evident at the advanced venture capital stage (later-stage VC / Series A): while European start-ups raise an average of only EUR 5.8 million at this stage, U.S. companies are able to secure an average of EUR 13.7 million (Bundesverband Beteiligungskapital et al. 2023). This financing weakness remains the Achilles' heel of the European start-up ecosystem.

Median VC Financing by Stage in Europe, the United States, and Globally, 2021 (EUR million)
Source: Bundesverband Beteiligungskapital et al. (2023)

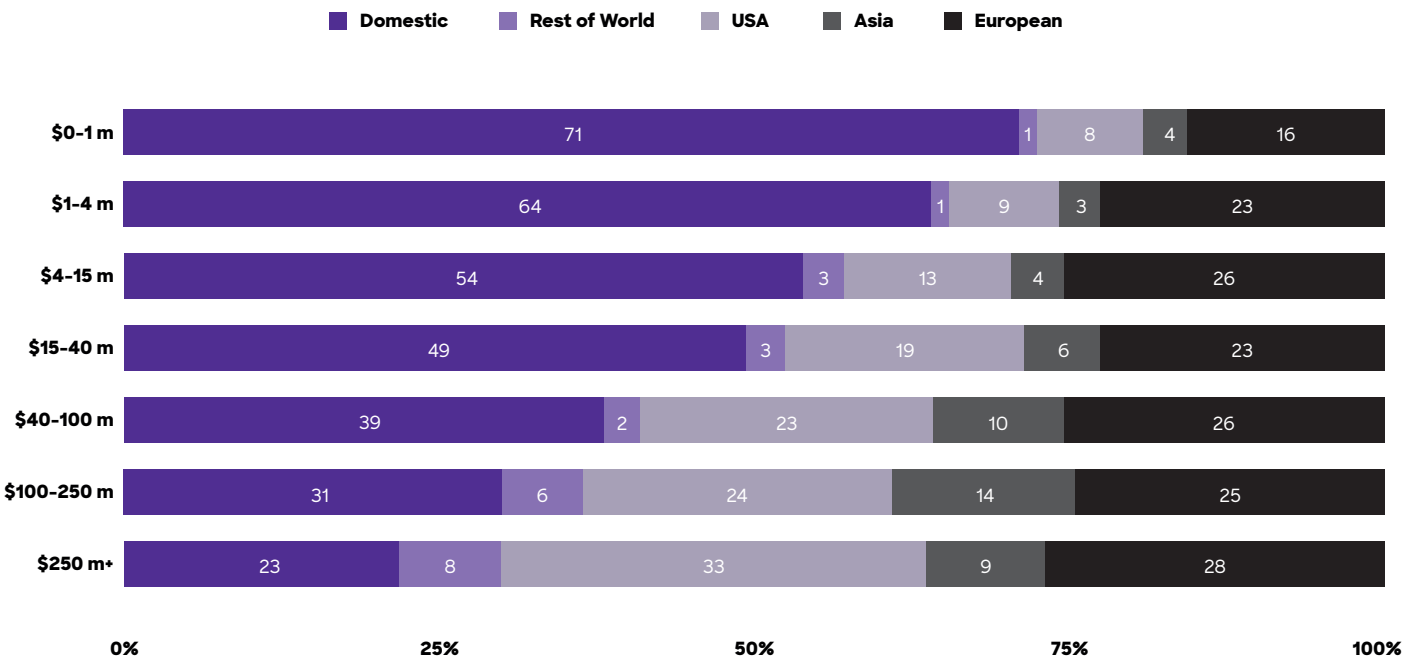


Financing barriers in Europe are particularly pronounced in the hardware and deep-tech sectors. Especially for the development of novel "first-of-a-kind" (FOAK) production facilities—that is, initial, technologically unprecedented plants or products that have never before been implemented—appropriate growth financing instruments are lacking. These projects typically require high investment volumes (generally between EUR 20 million and EUR 100 million) (Deutsche Energie-Agentur 2023).
Due to their high technological risk, such ventures neither fit the investment profile of traditional venture capital funds nor align with the collateral-based lending logic of commercial banks.
The limited availability of credit guarantees and risk-mitigation instruments further exacerbates this challenge, undermining competitiveness and incentivizing the relocation of industrial value creation abroad (Tech for Net Zero 2023; Open Letter 2023).

Strategic Dependency:
The Consequences of the Financing Gap

These structural financing deficits create a direct dependency of young German companies on foreign venture capital, particularly from the United States. Already today, around two-thirds of the capital invested in German start-ups originates from abroad (Bundesverband Beteiligungskapital et al. 2023).
This imbalance becomes even more pronounced during the critical growth stages: for investment rounds exceeding EUR 100 million, European companies are particularly reliant on U.S. investors. The underlying reason lies in the unequal scale of capital markets. While funds with volumes exceeding EUR 1 billion are the norm in the United States, European funds rarely surpass the EUR 500 million threshold (European Investment Fund 2023).

VC- Investments in European Deep Tech by Investor Origin (2023-2024) in USD
Source: Lakestar et al. (2025)



Since 2015, this gap has accumulated in Europe into a so-called **"later-stage gap" of approximately USD 375 billion**. This figure comprises two components: around USD 300 billion in unrealized financing ("not raised") and USD 75 billion in investments provided by U.S. capital providers (State of European Tech 2024).

The consequences of this dependency are severe and directly undermine Europe's technological sovereignty:

- **Relocation:**
  As around 60% of buyers of technology companies are based outside Europe, acquisitions frequently take place beyond the EU—often accompanied by the relocation of entire business units or operational sites (European Commission 2025).
- **Loss of Talent and Innovation::**
  Nearly 30% of European "unicorns" relocated their headquarters outside the EU between 2008 and 2021. As a result, Europe risks falling behind in key technologies, as it is unable to retain its fastest-growing companies or attract new ones at a comparable scale (European Commission 2024).
- **Loss of Control:**
  Particularly in the strategically important deep-tech sector, around half of the capital in later stages originates from non-European investors. This leads not only to a shift in governance and strategic decision-making, but also to the relocation of exits abroad (Lakestar et al. 2025).

1.2 Outlook for the Venture Capital Market

To assess the future volume of financing demand among existing start-ups, UVC Partners conducted a pragmatic demand projection for the German venture capital market through the end of 2030. The analysis is based on all relevant German start-ups that have completed Series A to Series E financing rounds since early 2022.

On this data basis, future capital requirements are estimated using a model that incorporates two key factors. First, the probability that a follow-on financing round will take place at all—drawing on U.S. data under the assumption that sufficient capital is available. Second, the size of follow-on rounds, which is derived from historical data from the German venture capital market. This approach allows the required financing volume for the period from 2026 to 2030 to be modelled.

Accordingly, total venture capital demand in 2028 is estimated at approximately EUR 16 billion, of which around EUR 11 billion would be attributable to growth capital (Series B+). However, as only EUR 4 billion in growth capital is currently available, this results in a growth capital gap of EUR 7 billion. Early-stage capital demand of around EUR 4 billion is expected to be covered, indicating that the gap is concentrated exclusively in the growth segment.

Assuming continued dynamic growth in the early-stage segment, total annual venture capital demand is projected to rise to approximately EUR 20 billion by 2030—around EUR 14 billion of which would be required for growth-stage financing. As a result, the growth capital gap is expected to widen to approximately EUR 10 billion.

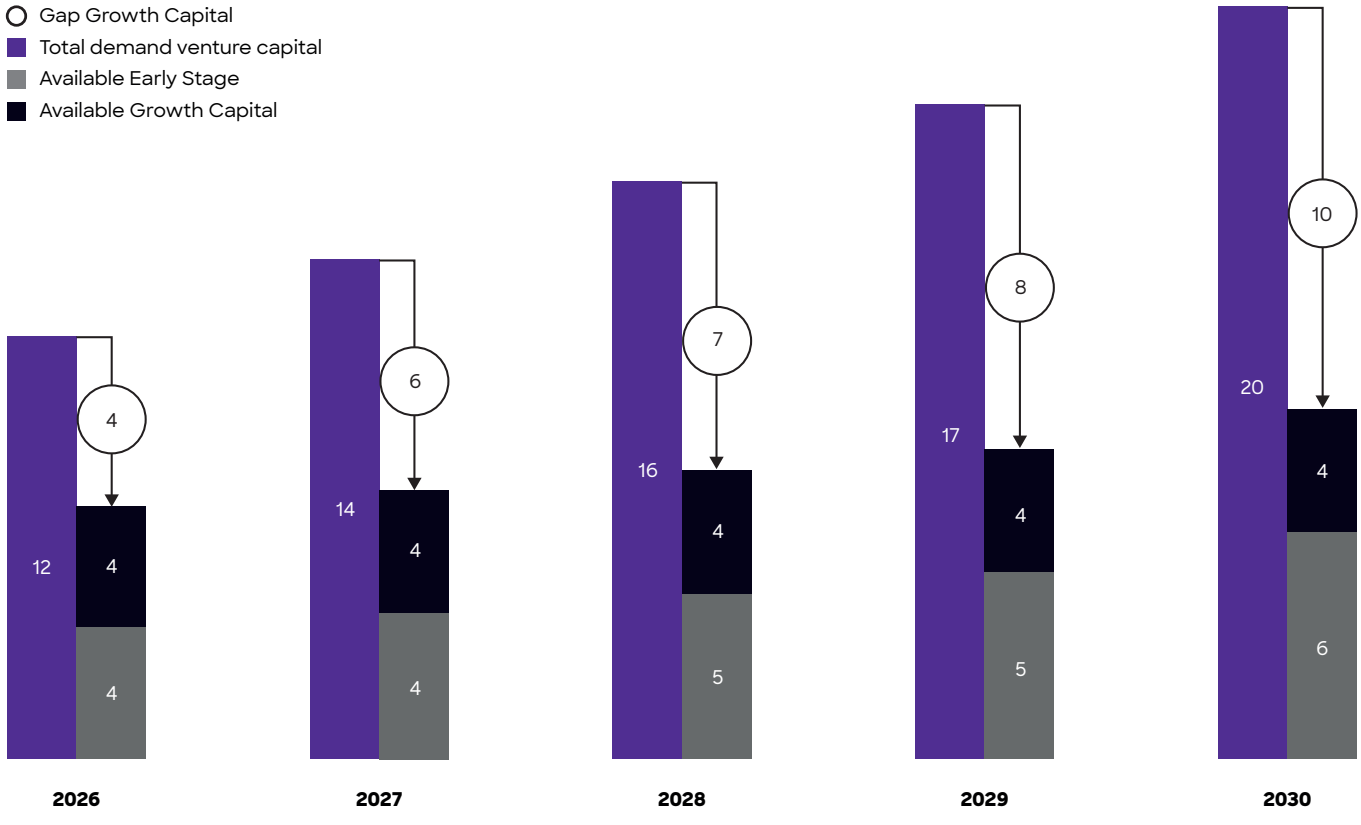
This gap illustrates the structural undersupply of growth capital and forms the starting point for the subsequent analysis. The structural weakness of the German capital market becomes particularly evident in international comparison: while U.S. Scaleups regularly close financing rounds in the hundreds of millions, the German supply of growth capital remains fragmented and risk-averse (Deutsche Energie-Agentur 2023).

This discrepancy underscores the need for new and scalable financing instruments to secure Germany's international competitiveness and to sustainably accelerate economic transformation driven by deep-tech innovation.

"Early-stage start-ups currently operating today require growth-stage financing of approximately EUR 8 billion per year. If this gap is not closed, a large share of existing investments – as well as the underlying innovations—will be lost, as many of these ventures will no longer be able to reach market maturity."

- Johannes von Borries
Managing Partner UVC Partners **-**

Outlook for Venture Capital Financing Demand
Source: UVC Calculation, 2025 (EUR bn)



2.0 Existing Venture Capital Activities

In recent years, Germany has developed a broad landscape of funding and investment instruments for start-ups and Scaleups, ranging from public initiatives to private funds. While early-stage financing is now well established in several start-up hubs such as Berlin and Munich, there remains a nationwide need to catch up when it comes to growth-stage financing for start-ups and Scaleups.

This chapter provides an overview of existing activities and Programmes that specifically support the scaling of young companies—from national and European initiatives such as KfW Capital, the Zukunftsfonds Deutschland, and the WIN Initiative to leading private venture capital and growth funds. The objective is to increase the visibility of the current growth financing landscape and to highlight its importance for the competitiveness of Germany and Europe as innovation hubs.

2.1 Growth-Stage Financing through Public Initiatives

Over the past two decades, significant progress has been made in Germany in supporting early-stage investment in start-ups. One established instrument is the **High-Tech Gründerfonds** (HTGF), which was launched in 2005 as a public-private partnership. Today, HTGF manages a total volume of approximately EUR 2 billion, allocated across four seed funds as well as an opportunity fund with around EUR 700 million. Another pioneering initiative is the Federal **Agency for Disruptive Innovation (SPRIND)**, which was founded in 2019 to promote disruptive technologies and is funded with approximately EUR 1 billion through 2029. Its mandate is to identify and further develop research ideas with the potential to become breakthrough innovations. The agency is modelled on the U.S. research authority Defence Advanced Research Projects Agency (DARPA).

Both actors play a significant role in shaping Germany's start-up and Scaleup ecosystem today; however, they are not at the center of growth-stage financing. The challenge now is to transfer the successful activation achieved in the early start-up phases into the later growth financing stages in order to enable sustainable growth.

Accordingly, this white paper focuses on initiatives and Programmes that explicitly target the scaling and growth of start-ups and Scaleups. Nationwide Organisations and initiatives such as KfW Capital and the European Investment Fund (EIF), through instruments such as the Growth Fund Germany (Wachstumsfonds Deutschland) and the GFF-EIF Growth Facility, support VC and growth funds active in Germany in executing larger financing rounds for start-ups and Scaleups.

In addition, Germany's federal states complement these efforts with their own regional funds and instruments. Bavaria, for example, engages through Bayern Kapital and the Growth Fund Bavaria 2 (Wachstumsfonds Bayern 2), with a volume of approximately EUR 165 million, to specifically support follow-on financing for high-growth technology companies (Bayern Kapital 2024). In North Rhine-Westphalia, NRW.BANK provides growth capital for technology-oriented companies through the NRW.Venture IV Fund (EUR 150 million, ticket sizes of up to EUR 15 million) (NRW.BANK 2025). Berlin, through IBB Ventures, operates several state-level funds (technology, creative industries, and impact) with a total volume of approximately EUR 130 million to accompany start-ups and Scaleups during their growth phase (IBB Ventures 2024).

At the European level, Programmes such as the European Innovation Council (EIC), InvestEU, and the planned EU Scaleup Fund also aim to mobilise additional private capital and to strengthen the overall competitiveness of Europe's innovation ecosystem (European Commission 2025).

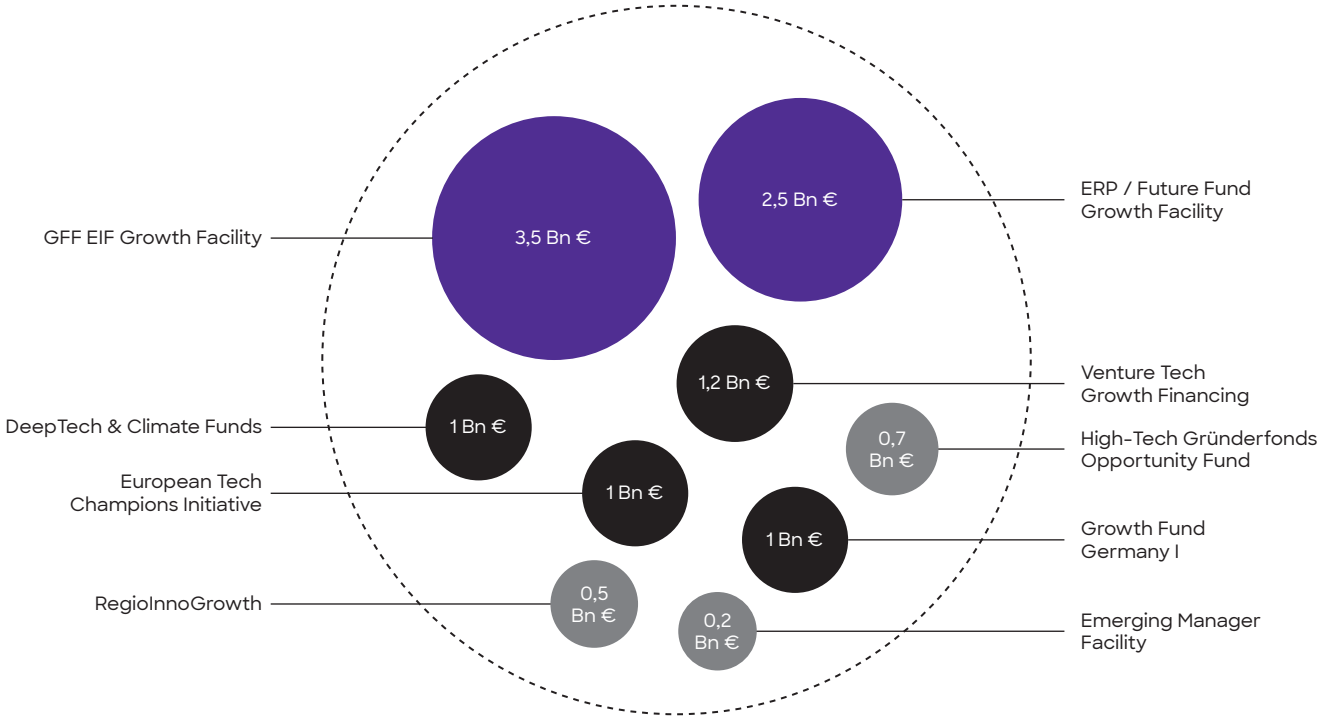
The **WIN Initiative ("Growth and Innovation Capital for Germany")** brings together public and private investment to structurally strengthen the German venture capital market. Its objective is to improve financing conditions for start-ups, Scaleups, and innovation-driven technology companies, thereby enhancing the competitiveness of Germany as an innovation hub (KfW 2024).

As of autumn 2025, the WIN Initiative comprises a total volume of approximately **EUR 12 billion**, consisting of public funds from the federal government and the ERP Special Fund, as well as private commitments from institutional investors (BMF 2024; KfW Capital 2025). By **2030**, this volume is expected to increase to around EUR 25 billion (KfW 2024).

The core element of the initiative is the **Future Fund Germany (Zukunftsfonds Deutschland)**, which is endowed with **approximately EUR 10 billion in public funding** and serves as the central public support architecture for venture capital in Germany (KfW 2024).
It brings together nine operational funding instruments that address different financing needs along the corporate life cycle and are designed to mobilise additional private capital. The total financing volume of these instruments amounts to approximately **EUR 11.5 billion**, of which around EUR 10 billion is provided from public sources and approximately **EUR 1.5 billion** is complemented by private co-investments (KfW 2024).

As part of the second expansion phase of the WIN Initiative, the launch of Growth Fund Germany II (Wachstumsfonds Deutschland II) is envisaged, with a volume of EUR 200 million provided by the federal government and an additional EUR 100 million contributed by KfW.

Building Blocks of the Future Fund Germany
Source: Own illustration (2025)



2.2 Growth-Stage Financing through Private Initiatives

Over the past decades, the number of venture capital funds in Germany has increased significantly. The following table provides an overview of major German VC funds and the capital volumes they manage.

The following provides a data-driven overview of selected venture capital firms in Germany, organized by assets under management (AUM) or the size of their most recent funds, as well as by their follow-on capacity—that is, their ability to participate in subsequent financing rounds.

As not all funds disclose their total figures, the groups are presented in separate categories.

Primary metric:
Most recently disclosed assets under management (AUM); where unavailable, the size of the most recent fund is used as a proxy.

Follow-on capacity:
Presence of continuation or opportunity funds, or publicly disclosed information on reserve allocations.

Data currency:
Data are based on official disclosures and press coverage from 2022–2025.

approx. ≥ EUR 1 bn AUM

VC / Fund	Location / HQ	AUM / Fund Size	Notes
Earlybird Venture Capital	Munich, Germany	≈ EUR 2.5 bn	Multiple funds (Digital West, Health, Growth Opportunity)
High-Tech Gründerfonds (HTGF)	Bonn, Germany	≈ EUR 2 bn (across four funds and one opportunity vehicle)	Germany's largest early-stage fund; public-private partnership.
HV Capital	Munich, Germany	≈ EUR 2.8 bn (Fund IX) + continuation fund	Active across all stages, from seed to growth.
Project A Ventures	Berlin, Germany	≈ USD 1 bn (≈ EUR 930 m)	Operational co-investment approach; dedicated growth vehicle.

approx, EUR 500 m to EUR 1 bn AUM

VC / Fund	Location/HQ	AUM / Fund Size	Notes
UVC Partners	Munich, Germany	> EUR 600 m (Current: Fund IV EUR 250 m + Growth Fund II in preparation)	Focus on deep tech, B2B, and sustainability; up to EUR 30 m per company; early-stage focus with a selective growth vehicle.
Cherry Ventures	Berlin, Germany	≈ EUR 484 m (Fund V – 2025)	Pan-European seed investor.

approx. EUR 150 m to EUR 500 m AUM

VC / Fund	Location / HQ	AUM / Fund Size	Notes
Picus Capital	Munich, Germany	≈ EUR 1.5 bn (Fund II – 2025)	Combination of fund structure and evergreen holding.
Capnamic Ventures	Köln, Germany	≈ EUR 190 m (Fund III – 2022)	B2B software focus, DACH region.
Point Nine Capital	Berlin, Germany	≈ EUR 180 m (Fund VI – 2022)	Specialist in SaaS and marketplaces.
BlueYard Capital	Berlin, Germany	~EUR 500 m (Fund III – 2022)	Focus on frontier tech, Web3, and biotech.
Visionaries Club	Berlin, Germany	~EUR 400 m total fund volume	B2B tech, SaaS, Industrialisation, and deep tech.
Vsquared Ventures	Munich, Germany	~EUR 450 m	Specialised deep-tech fund.

Also active in the German market are venture capital investors headquartered in the DACH region, with offices in multiple locations:

VC / Fonds	Location /HQ	AUM / Fund Size	Investment Focus	Follow-on Capacity
Redalpine	Zurich, Switzerland	> USD 1 bn (~EUR 1 bn)	Seed/Early stage; software, science, health, and technology	Largest recent fund approx. USD 200 m (RAC VII); solid follow-on capacity.
Lakestar	Zürich/Berlin/London	≈ EUR 2 bn after fund close 2024	Seed to growth; deep tech, fintech, healthcare	Investing from seed to growth; new fund volume of ~USD 600 m indicates high follow-on capacity.
Speedinvest	Vienna, Austria (with European activities)	> EUR 1 bn	Pre-seed/seed; technology start-ups (deep tech, fintech, climate)	Multi-million follow-on funds referenced (see previous entry).

Although the supply of **private growth venture capital** remains limited, this segment has gained significant importance in Europe over recent years. Alongside institutional investors and corporate venture capital, several leading private funds have emerged that deploy substantial capital volumes to invest selectively in high-growth start-ups and Scaleups—predominantly with a strong focus on technology.

These growth funds bridge the financing gap between traditional early-stage venture capital and private equity. They enable European start-ups and Scaleups to progress beyond the early growth phase and to take the step toward international scaling.

A review of the European market shows that seven funds, in particular, stand out as leading players in the field of growth-stage financing, distinguished by their large current fund volumes, strong market presence, and established reputations.

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"The lack of growth capital is one of the central competitive disadvantages facing European deep-tech Scaleups. Prolonged hesitation in Europe has resulted in some of the strongest innovations—and their value creation—being captured by foreign investors. What is needed now is decisive action to expand growth capital that is committed to Europe's deep-tech potential."

- Dr. Jan Goetz
CEO IQM Quantum Computers **-**

VC / Fund	Location / HQ	Volume Current Growth Fund (approx. EUR billion)	Type / Focus
EQT	Stockholm	EQT Growth Fund (2022): 2.4	Growth / Late-Stage · Tech
Index Ventures	San Francisco / London	Growth Fund (2024): 1.3	Growth / Late-Stage · Tech
Forbion	Naarden	Forbion Growth Opportunities Fund III (2024): 1.2	Growth / Late-Stage · Bio Tech European Focus · Med Tech Human Health · Planetary Health
Mundi Ventures	Madrid	Kembara Fund 1 (2024) = 1.0	Growth/Late Stage Deep Tech, Climate, Europe
Atomico	London	Growth Fund VI (2024): 0.6	Growth / Late-Stage · Tech Europäischer Fokus
Balderton Capital	London	Growth Fund II (2024): 0.6	Growth / Late-Stage · Tech European Focus
Innovation Industries	Amsterdam	Fund III (Early stage + Growth) (2023): 0.5	Growth / Late-Stage · Deep Tech European Focus · Industrial Tech Med Tech · Food / Agri Tech
Lakestar	Zurich	Lakestar Growth II (2024): 0.3	Growth / Late-Stage · Tech Europäischer Fokus

When comparing these volumes with venture capital funds in the United States, the scale of competition becomes evident: large, globally active growth funds have been established there, regularly enabling financing rounds in the hundreds of millions.

Among the most important examples are **Insight Partners** (current Growth Fund XIII: USD 12.5 billion), **New Enterprise Associates** (current growth fund: USD 6.2 billion), and **Founders Fund** (current growth fund: USD 4.6 billion). These funds not only shape the U.S. market, but also invest globally and set benchmarks in terms of deal size, execution speed, and internationalisation.

This clearly illustrates that while Europe has made noticeable progress in building private venture capital funds in recent years, the international gap—particularly with regard to growth funds compared to the United States—remains substantial.

For the European ecosystem, it is therefore crucial to establish fund structures with comparable scale and firepower in order to secure the long-term global competitiveness of domestic start-ups and Scaleups.

3.0 Case Study on Scaleup Financing

This chapter examines how German and European technology companies finance their growth stages.

Using the examples of Isar Aerospace, Proxima Fusion, and Sunfire, the chapter illustrates which financing sources—from venture capital and institutional investors to public funding—are utilized, and how international investors play a central role in this context.

It highlights the differing financing strategies of capital-intensive Scaleups and underscores the importance of both public and private capital for scaling technologies that are critical to the future.

Source: Isar Aerospace

3.1 Isar Aerospace

Isar Aerospace is a European Scaleup with international investor participation. The company is developing "Spectrum," a privately financed European launch vehicle, and reached unicorn status following a EUR 150 million financing round led by Eldridge Industries in June 2025 (Spiegel 2023). The capital is primarily intended to expand production capabilities and service offerings.
In parallel, the European Space Agency (ESA) awarded two missions to Isar Aerospace in August 2025 under its Flight Ticket Initiative, with launches scheduled from Andøya starting in 2026 (European Space Agency 2025). This contract represents an important public-sector demand signal and is emblematic of growing state demand for the services of private NewSpace companies such as Isar Aerospace. Even more substantial demand from the public sector could emerge from the Defence domain. In this context, German Federal Minister of Defence Boris Pistorius emphasized the security and industrial policy importance of sovereign European access to space at the Space Congress of the Federation of German Industries in September 2025 (Federal Ministry of Defence 2025). In June 2025, Isar Aerospace also agreed on a EUR 150 million convertible bond with the international financial investor Eldridge Industries (Wirtschaftswoche 2025).

An international comparison highlights the scale of the challenge facing Isar Aerospace. Over the course of its development, SpaceX has raised a low double-digit billion amount in private capital—approximately USD 12 billion according to commonly cited sources. Against this backdrop, the availability of European growth capital for orbital launch capabilities remains limited. In addition, public-sector demand signals differ by orders of magnitude. SpaceX received its first major contract from NASA in 2008—six years after its founding in 2002—worth approximately EUR 1.6 billion (Deutschlandfunk 2021). By comparison, ESA contracts awarded to Isar Aerospace to date amount to around EUR 26 million. While these provide an important initial contribution, they are insufficient to materially support large-scale growth financing (Isar Aerospace 2021; 2024).

Financing History

- Continuously increasing financing volumes from seed to Series C
- Growing individual round sizes (up to EUR 150 million convertible financing; EUR 155 million Series C)
- Combination of equity, debt, and convertible financing instruments
- Participation of prominent investors, including Lakestar, Porsche, HV Capital, Eldridge Industries, UVC Partners, and Vsquared.

3.2 Sunfire

Sunfire, founded in Dresden in 2010, manufactures industrial electrolyzers and closed a Series E financing round of EUR 215 million in March 2024. In addition, the company secured up to EUR 100 million in the form of an EIB term loan, as well as access to approximately EUR 200 million in already approved but not yet drawn public funding. Such loans are typically used to finance investments such as equipment purchases or business expansion and are repaid in regular instalments over their maturity (Startup Insider 2021). This positions Sunfire among the best-capitalised electrolyzer companies in Europe (Sunfire 2024).

Previously, Sunfire had expanded its Series D round to EUR 195 million and, in parallel, secured EUR 60 million through the German Federal Ministry of Education and Research's flagship project H2Giga to support the industrialisation of its electrolyzer technology (Sunfire 2022). This combination of venture capital and growth equity, institutional investors, and public funding Programmes is characteristic of European cleantech Scaleups.

In the United States, electrolyzer and hydrogen companies additionally mobilise large-scale loan guarantees and project finance structures.

The U.S. Department of Energy (DOE), through its Loan Programmes Office, provides targeted loan guarantees to promote large-scale clean energy projects and accelerate their market entry (U.S. Department of Energy n.d.). One example is Plug Power, which received a DOE loan guarantee of USD 1.66 billion for hydrogen production.

On the equity side, transactions such as the USD 380 million Series C round of Electric Hydrogen, complemented by credit facilities exceeding USD 100 million, illustrate the depth of the U.S. capital market. In Europe, EIB loans and funding instruments such as the Important Project of Common European Interest (IPCEI) play a supportive role; this refers to a transnational initiative of common European interest that is specifically supported by public funding and pursues particularly ambitious objectives in research, innovation, growth, employment, and the competitiveness of EU industry (Federal Ministry for Economic Affairs and Energy, n.d.). Nevertheless, substantial equity investments remain a key bottleneck for the construction of large-scale manufacturing facilities (Reuters 2024; Electric Hydrogen 2023).

Financing History

- Establishment of a broad financing base since 2012: spanning early financing rounds through to Series E in 2024 totaling EUR 215 million, supplemented by up to EUR 100 million in loans from the European Investment Bank (EIB) and approx. EUR 200 million in EU grant funding.
- Prior expansion of Series D financing to approx. EUR 195 million, as well as EUR 60 million from the German Federal Ministry of Education and Research's flagship project H2Giga to support the Industrialisation of electrolysis technology.
- Combination of VC and growth investors, including Lightrock, Copenhagen Infrastructure Partners (CIP), Blue Capital, and Planet First Partners, alongside extensive European funding Programmes (EU, EIB).

3.3 Proxima Fusion

Proxima Fusion is a deep-tech spin-out founded in Munich in 2023, originating from the Max Planck Institute for Plasma Physics. The company develops quasi-isodynamic stellarators based on high-temperature superconductors and aims to realise Europe's first fusion power plant in the late 2030s.

Since its founding, Proxima Fusion has raised more than EUR 200 million in equity and public funding across four financing rounds. A key milestone was the Series A financing of EUR 130 million in June 2025, followed by an extension of EUR 15 million in September 2025. The diverse investor base from Germany, Europe, and the United States highlights the company's international connectivity and the growing confidence in the European fusion industry. However, an international comparison of this case also underscores the immense capital requirements: the U.S. fusion start-up Commonwealth Fusion Systems has already raised approximately USD 3 billion in funding.

In early 2025, Proxima Fusion published "Stellaris," the world's first integrated concept for a commercial fusion power plant based on a stellarator design, intended to enable reliable and continuous operation. In order to achieve the goal of constructing a first fusion power plant in Germany within the 2030s and to remain competitive in the global race, the fusion demonstrator "Alpha" must be built by 2031.

The costs for constructing an initial demonstrator are estimated at EUR 1.5–2.0 billion. This financing can only be secured through a joint public-private co-financing approach. Proxima Fusion is in close dialogue with the relevant stakeholders at both the federal and state levels. The Fusion Action Plan represents an important step toward establishing the framework for concrete implementation within the federal budget and for operationalisation within the ministries over the coming months and years. In addition, it is essential to address fundamental regulatory issues for this new technology in a coordinated manner.

Financing History

- Since 2023, the company has raised more than EUR 200 million, including a EUR 130 million Series A round in 2025 with an additional EUR 15 million extension, as well as several European grants (EIC, BMBF).
- This was preceded by a EUR 20 million seed round in 2024 and pre-seed financings in 2023 to support early-stage technology development.
- The international investor base includes, among others, Germany (UVC Partners, Cherry Ventures), the United Kingdom (Balderton Capital), the United States (Lightspeed), as well as European public funding institutions.

Insights from the case studies: growth financing of capital-intensive scaleups in Europe

The three case studies illustrate how capital-intensive Scaleups in Germany and Europe pursue different pathways of growth financing and how they position themselves in a transatlantic comparison.

A common denominator across all cases is the reliance on a mix of private and public funding to realise their technological ambitions. Isar Aerospace, Proxima Fusion, and Sunfire demonstrate that leading German Scaleups in deep-tech and cleantech sectors depend on international investors when it comes to large financing rounds.

At the same time, the comparison with U.S. companies such as SpaceX, Commonwealth Fusion Systems, and Plug Power shows that the inflow of growth capital into German Scaleups remains limited. Large-scale projects can often only be realised through the combination of multiple financing instruments, while a deep and scalable growth ecosystem is still lacking.

This underscores the central message: safeguarding the global competitiveness of German technology Scaleups requires significantly increased financial resources and stronger institutional support. In addition, it is essential that a greater share of public procurement in Europe is directed toward domestic young companies.

Source: Proxima Fusion

4.0 Policy Recommendations

4.1 Strengthening Capital Markets and Mobilising Growth Capital for Scaleups through Innovative Financing Structures

This chapter develops concrete policy recommendations based on discussions with the expert panel. The analysis draws on more than 30 qualitative interviews with investors as well as start-up and Scaleup founders. The findings from these interviews were systematically structured and synthesised into the most important cross-cutting recommendations. The objective is to identify measures that improve access to growth capital and sustainably strengthen the financing options available to German Scaleups. The proposed measures are addressed to policymakers as well as to key actors within the finance and start-up ecosystem, in particular venture capital and growth investors, banks, institutional investors, and organisations that advise or support start-ups.

Growth financing continues to represent the Achilles' heel of the European start-up and Scaleup ecosystem. Fragmented capital markets, pronounced risk aversion, and comparatively small fund sizes hinder the execution of large-scale financing rounds.

As a result, German Scaleups increasingly face relocation or capital migration effects, as they frequently need to rely on international capital—particularly from the United States—for later-stage financing (KfW 2024).

"Germany has a solid foundation of angel capital and early-stage financing. The real gap, however, emerges at the growth capital stage—when large financing rounds become necessary. This is where institutional investors and large family offices would need to step in, yet both have so far shown considerable restraint in Germany."

- Dr. Joachim Faber
Multi-Board Member -

A) Closing the central gap: growth funds from Series B to pre-IPO

While early-stage financing in Germany can now draw on a larger number of venture capital funds, the growth stage suffers from a shortage of lead investors and large financing rounds above approximately EUR 20 million. This gap reinforces dependence on foreign capital providers and increases the likelihood that companies relocate abroad (Hello Tomorrow, 2025).

Policy Recommendations

1. Establishing and scaling large European growth funds

To close the structural gap in growth financing, the establishment of large European growth funds in the multi-billion-euro range is required. Crucially, this involves not only the initial fund launch but also the systematic scaling of subsequent fund generations in order to secure and strengthen investment capacity over the long term.

The objective is to establish funds that are sufficiently large to act as lead investors—that is, to set the terms of a financing round, take responsibility for technical due diligence, and coordinate the investor consortium. This is precisely where the structural bottleneck in the German market becomes apparent: most funds are too small to assume this role and often lack the necessary technical expertise to adequately assess complex deep-tech business models.

In addition, **fund-of-funds structures** should be strengthened. A fund-of-funds vehicle such as the "Wachstumsfonds Deutschland" does not invest directly in start-ups or companies but rather in other funds. This approach pools capital from various sources—such as public and private investors—and allocates it broadly through specialised funds such as UVC Partners. Such a structure enables more efficient capital allocation, reduces the risk of individual investments, and, in particular, facilitates access for institutional investors to a market segment that has so far been difficult to access. In this way, the available pool of growth capital can be significantly expanded both in breadth and depth (Tech for Net Zero 2023).

2. Developing and strengthening lead-investor capabilities for the growth stage

Closing the growth-stage financing gap requires not only the targeted establishment of new large European growth funds but also the strengthening of lead-investor capacity among existing venture capital funds that possess the willingness and expertise to more frequently assume lead roles in larger financing rounds. Supportive measures could include advanced development Programmes designed to upskill established VC investors and to foster stronger international connectivity with leading global funds. This could be achieved, for example, through co-investments or secondments, enabling systematic knowledge transfer and experience sharing (KfW 2024).

3. Trust-Building and First-Time-Fonds

A further central obstacle to the expansion of venture capital in Europe is the limited access to capital for new fund managers. First-time funds in particular face substantial barriers to market entry, as investors are often reluctant to commit capital to inexperienced fund managers. Studies show that uncertainty regarding the capabilities and strategies of new fund managers creates a significant trust deficit, which strongly constrains investment volumes (KfW 2024).
To address this issue, public anchor investments play a crucial role. Such measures lower entry barriers and mobilise additional private capital. To date, however, public anchor investments remain rare, limiting their signalling effect—despite the fact that precisely these investments are critical for building confidence among other investors (KfW 2024).

Conclusion:
The European Innovation Council (EIC) is currently establishing the EU ScaleUp Fund, a European growth fund with a target volume of up to EUR 5 billion—an important step for deep-tech Scaleups in Europe. However, closing the financing gap will require significantly more capital as well as a clear political strategy on how private venture capital firms can be deliberately enabled and incentivised to establish additional private growth funds with lead-investor capabilities.
The objective should be to systematically close the gap identified in this paper over the coming years, for example by strategically developing five to ten large-scale growth funds in the multi-billion-euro range.

„Foundations still hold significant untapped potential to contribute to an innovation-driven economy. Especially at this moment, there is a strong case for deliberately deploying capital where it can generate societal impact—for example, through investments in venture capital funds aimed at scaling European innovation. If more foundations take this step, it could help trigger an important cultural shift.“

- Dr. Heba Aguib
Member of the Board BMW Foundation Herbert Quandt ***-***

B) Mobilising institutional investors

Despite substantial private wealth, only a small share is currently invested in the financing of high-growth domestic young companies in Germany. The potential of foundations, family offices, and institutional investors remains largely untapped.

Foundations

German foundations hold total assets of approximately EUR 100 billion (Bundesverband Deutscher Stiftungen, 2025). Their investment strategies are traditionally long-term in nature and often conservative, for example with a strong focus on bonds. However, interest in private equity as an asset class has increased, and there is also further potential for expansion in venture capital. Many foundations are deeply engaged in supporting education and science. This thematic orientation creates an intrinsic interest in innovation and societal progress. Larger foundations in particular may be well positioned to provide important impulses within the innovation ecosystem through venture capital investments and to act as pioneers for other institutional investors. Venture capital fund-of-funds structures are especially well suited for foundations, as they offer broad diversification, reduce risk, and provide straightforward access to this asset class. One example is the BMW Foundation, which allocates more than 10% of its assets to impact-oriented venture capital funds, thereby deliberately promoting innovation and sustainable growth and sending strong signals to the market (BMW Foundation n.d.).

Large family offices and corporate wealth

Family offices are becoming an increasingly important source of capital for start-ups and Scaleups. Many large family offices originate directly from entrepreneurial activity. This background enables them to invest in venture capital not only as family offices themselves but also through affiliated companies. As a result, they possess specific expertise and a deep understanding of entrepreneurial opportunities and risks, which further strengthens their engagement in the VC sector.

Due to their long-term investment horizon and high allocation to alternative asset classes—on average around 45% of assets—family offices have a structural advantage when it comes to investing in Scaleups (J.P. Morgan Private Bank, 2024). This willingness to take risk distinguishes them from more defensive investor groups and positions them as key actors in the growth financing of Scaleups.

To strengthen their engagement in venture capital, the German Federal Ministry for Economic Affairs and Energy (BMWE) and UnternehmerTUM have been supporting exchange formats such as roundtables since 2019, fostering dialogue between family offices and the start-up ecosystem. The aim is to reduce existing information asymmetries and, over the long term, lower entry barriers for VC investments.

Institutional asset pools

Insurance companies, pension funds, and occupational pension schemes in Germany manage assets exceeding EUR 2.5 trillion. German insurers alone manage more than EUR 1.6 trillion, of which EUR 200–300 billion are newly invested each year, yet only around EUR 8 billion in total is allocated to venture capital (GDV 2025). While institutional asset pools from the United States and Canada rank among the most important providers of growth capital globally, German institutional investors have so far played only a minor role in this segment.
Even a modest reallocation of institutional assets toward venture capital would have the potential to significantly expand the German VC market, leverage private investment, and sustainably reduce dependence on public funding. To achieve a genuine paradigm shift in growth financing, institutional asset pools therefore represent a central and indispensable group of actors that must be deliberately integrated (Euramco Asset n.d.; Redstone Venture Capital 2023).
An important step in this direction is the WIN Initiative, under which numerous institutional investors have committed to investing approximately EUR 12 billion in young innovative companies by 2030, with the aim of sustainably improving structural conditions and access to capital in Germany (KfW 2024).

Policy Recommendations

1. Improving regulatory frameworks tailored to institutional investor profiles

To foster long-term, substantial capital flows into venture capital and growth financing, regulatory frameworks should be specifically and differentially adapted to various investor types—such as insurance companies, pension funds, and occupational pension schemes. Measures must address the distinct regulatory, strategic, and operational barriers to venture capital investment depending on the respective investor profile. This includes, for example, differentiated treatment of insurance investments under Solvency II, the EU directive defining capital requirements for insurers; the relaxation of coverage requirements for pension funds; increasing the risk capital quota from 35% to 40%; or introducing an additional infrastructure quota of 5%. Look-through approaches would provide institutional investors with greater flexibility (KfW 2024). Beyond regulatory amendments, enhanced legal clarifications and the resulting legal certainty can also contribute to increasing investment activity by institutional investors.

2. Targeted tax incentives to incentivise venture capital investments

Fiscal policy measures can likewise play a targeted role in directing institutional and private capital toward venture and growth capital. Possible instruments include tax credits or allowances for investments in venture capital and growth funds, as successfully implemented in other European countries, including France. The WIN Initiative additionally proposes expanding the scope for funds subject to the Investment Tax Act to allow investments in commercially active partnerships. Furthermore, increasing the maximum amount for reinvestments is intended to facilitate capital flows into the private equity and venture capital market (KfW 2024).
In addition, the introduction of target corridors based on a comply-or-explain principle could be considered. Under such a mechanism, institutional investors could be required to allocate a defined share of their investment volume—such as one to three percent—to venture and growth capital, or publicly explain why they choose not to do so. Such an approach would enhance transparency, strengthen incentives, and, over time, channel more capital into productive and innovation-oriented asset classes (KfW 2024).

3. Creating effective investment instruments to attract institutional investors to venture capital

Alongside regulatory and tax measures, targeted investment instruments are essential to reduce risk and facilitate entry for institutional investors. These include performance gates, matching funds, and first-loss tranches, which cap potential losses and leverage private investment. The WIN Initiative supports such approaches through fund-of-funds structures such as Wachstumsfonds Deutschland I and II, aiming to reduce fragmentation, increase diversification, and secure long-term capital flows. Complementary instruments—such as generational capital funds, state-supported retirement savings vehicles, investor education Programmes, and transparent data platforms—further enhance trust and transparency in venture capital funds (Hello Tomorrow, 2025).

Conclusion:
Regulatory frameworks and insufficient tax incentives have so far constrained the mobilisation of institutional capital for venture and growth capital in Germany. Policymakers are therefore called upon to systematically remove barriers and introduce new incentives. At the same time, existing regulations already provide room for manoeuvre that institutional investors can actively utilise. Consequently, not only political reforms are required, but also greater engagement from foundations, family offices, and, above all, large institutional asset pools to allocate a larger share of their capital toward future-oriented technologies and Europe's innovation capacity.

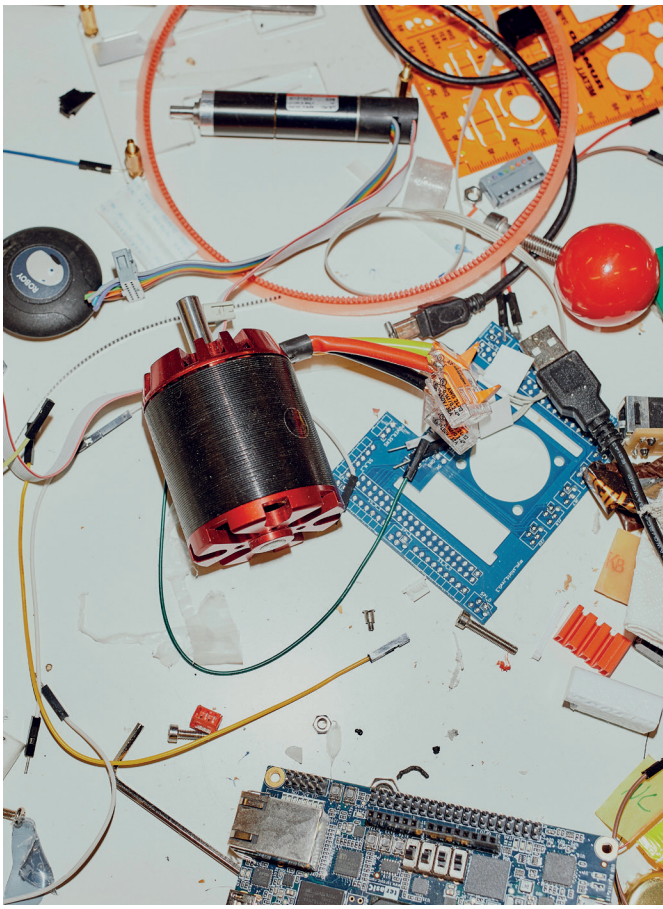
C) Beyond equity: hybrid financing models for deep-tech and hardware Scaleups

Over recent decades, venture capital investments have primarily focused on software start-ups with rapidly scalable business models. However, the number of deep-tech and climate-tech companies developing hardware is increasing. These companies require substantial investments in development and testing environments, manufacturing facilities, and infrastructure. Such capital-intensive business models impose specific financing requirements that go beyond traditional venture capital structures.

While software companies are typically financed through equity rounds, asset-heavy business models often require a combination of corporate and project financing. Pure equity financing via venture capital is frequently insufficient in these cases, as the capital required for investments in plant, equipment, and long-term assets significantly exceeds the typical investment volumes of venture capital funds.

On the demand side, climate-tech and deep-tech companies face the challenge of covering both high capital expenditures (CapEx) and ongoing operating expenditures (OpEx). Access to debt financing is particularly difficult for first-of-a-kind projects, as reliable cash flows, operational track records, or long-term offtake agreements are often not yet in place. As a result, companies are frequently forced to rely on costly equity financing, leading to substantial dilution and slowing down the scaling process.

On the supply side, these financing needs are often unattractive from the perspective of institutional investors and commercial banks. They are associated with high technological and market risks as well as long amortisation periods. Traditional venture capital funds typically lack the structures required to finance long-lived assets or infrastructure projects. Banks, in turn, are subject to high capital requirements and regulatory constraints, which further limit their risk appetite. This results in a structural financing gap between equity and debt that has so far been insufficiently addressed.
Innovative debt instruments are therefore gaining importance as a central building block for scaling deep-tech start-ups. However, both public and private providers currently lack a sufficiently developed range of offerings (Hello Tomorrow, 2025). This gap particularly hampers companies in the deep-tech and hardware sectors in transitioning from technological development to industrial-scale deployment.



"Debt financing is crucial for many start-ups, particularly those with high infrastructure requirements—yet at present, we are often forced to pre-finance substantial infrastructure expenditures with equity. An improved system that takes into account the specific characteristics of young companies and strengthens understanding of how cash flows function in start-ups would represent a significant step forward."

- Kevin Berghoff
Co-Founder & CEO QuantumDiamonds -

Policy Recommendations

1. IInnovative hybrid models for project and asset financing

Financing first-of-a-kind (FOAK) facilities and projects of clean-tech and deep-tech Scaleups requires hybrid models that combine equity and debt components as well as guarantees and grants. One example is the multi-billion-euro project financing of H2 Green Steel for the construction of a green steel plant in northern Sweden (European Investment Bank 2024). This financing rests on three pillars:

1.1. The largest share consists of debt financing provided by a consortium of private and public banks. These loans are largely secured by public guarantees, which were essential for effective risk sharing.
1.2. The second pillar is equity capital contributed by the company itself as well as by a broad range of strategic off-takers and global investors.
1.3. In addition, the company received a grant from the European Union.

Such flagship projects can serve as blueprints for future financing structures. To this end, guidelines and term sheets should be further developed and standardised, similar to established practices in venture capital financing rounds. This framework and accumulated experience would enable banks and investors to structure and assess the financing of FOAK facilities more quickly and efficiently in the future. In addition, best practices from different sectors—such as battery plants, e-fuel facilities, or green cement factories—should be shared, and training Programmes for investment managers should be established to continuously mobilise capital and enhance the bankability of projects.

2. Introduction of working capital and bridge financing instruments

Start-ups—particularly those that are growing rapidly but are not yet profitable or face long payment terms—often struggle to finance their working capital. Access to debt financing is more difficult than for established companies, as start-ups typically lack collateral. Traditional financing instruments include overdraft facilities or working capital loans, which are often accessible to young companies only through publicly supported Programmes, such as those offered by KfW or regional development banks, as these frequently provide liability exemptions for commercial banks.

In deep-tech Scaleups in particular, working capital requirements driven by expensive input components and lengthy production cycles can easily reach tens of millions of euros. Existing debt financing instruments should therefore be adapted to better address these cases.

3. The state as a lead customer: actively generating demand through public procurement

Public actors in Europe and Germany have so far focused primarily on promoting new technologies through research, development, and early-stage funding Programmes. Nevertheless, many innovative companies fail at the market entry stage due to a lack of sufficient initial demand. Here, the state can play a central role by acting as a pilot or lead customer.

In strategically critical areas such as defence, infrastructure, healthcare, or raw material security, the public sector should deliberately act as an anchor customer. At the same time, public procurement could also effectively support innovation in fields such as energy, mobility, or digital administration by giving preference to products and services offered by Scaleups.

International examples demonstrate the effectiveness of this approach. In the United States, public institutions have acted as early customers for decades. Programmes such as the Defence Innovation Unit (DIU) or procurement initiatives of NASA have played a key role in enabling start-ups and Scaleups to access markets at an early stage—thereby strengthening investor confidence and mobilising private capital.

Europe holds substantial untapped potential in this regard. A consistent demand-oriented approach in public procurement could not only accelerate growth but also sustainably enhance the international competitiveness of European companies. The topic of “public procurement and the state as an anchor customer” therefore offers significant potential and should be explored in greater depth in a dedicated white paper—as a central lever for developing start-ups and Scaleups in Germany and Europe into global market leaders.

Conclusion:
Deep-tech Scaleups in the growth phase are more dependent than other start-ups on a combination of equity and debt financing, complemented by working capital solutions and guarantees. To scale these companies successfully, financial institutions must better tailor their instruments to the specific needs of Scaleups, and the state should take on a significantly more active role as an anchor customer. Only through such close coordination between the public sector and financial markets can Europe accelerate its industrial transformation.

"If start-ups and Scaleups lack sufficient exit options, invested capital cannot be recycled back into the market and reinvested in new companies. This removes a central building block in the cycle of innovation and investment."

- Christoph Stresing
Managing Director, Startup Verband **-**

4.2 Strengthening exits and liquidity: increasing IPOs, M&A transactions for Scaleups, and building a robust secondary market

Exits remain a central bottleneck within the European innovation ecosystem. Whether through initial public offerings or mergers and acquisitions, exits fulfil a key function by creating liquidity and thereby sustaining the functioning of the broader capital market.

First, they enable capital returns to investors, which can subsequently be reinvested in new start-ups and Scaleups or into investment funds.

Second, successful exits send a strong signal to the market: they demonstrate the attractiveness of venture and growth capital investments and thereby stimulate capital inflows at earlier financing stages. Exits are therefore not merely individual success stories, but system-relevant levers for the dynamism and sustainability of the European innovation and capital market.

D) IPO weakness: fragmented regulations and insufficient demand

An increasing number of successful European Scaleups are opting for an initial public offering in the United States. On the New York Stock Exchange or the technology-focused NASDAQ, they benefit from more attractive framework conditions, higher valuations, and significantly stronger investor demand. Examples such as BioNTech, Spotify, or Klarna illustrate this trend.
In Europe, by contrast, regulatory requirements remain fragmented, demand for technology IPOs is subdued, and sufficient capital is lacking (McKinsey 2024). Between 2015 and 2023, a total of 531 technology IPOs took place in Europe; however, the average market capitalisation at listing was 11.6 times lower than in the United States. This has resulted in a cumulative economic gap of approximately USD 439 billion (Hello Tomorrow, 2025; McKinsey, 2024). While listing on U.S. exchanges may appear attractive for many companies in the short term, in the long run it can create dependencies that may lead to a relocation of technology, value creation, and control.

Policy Recommendations

1. Accelerating the Capital Markets Union to enable attractive European deep-tech IPOs

A functioning Capital Markets Union is essential to facilitate access to private capital for European growth companies and to strengthen international competitiveness. At present, however, regulatory requirements for IPOs differ significantly across Europe. Divergent rules on disclosure obligations, free float requirements, and price stabilisation make cross-border listings complex, create planning uncertainty, and increase costs for companies. A Europe-wide harmonisation of these requirements would enhance transparency, simplify procedures, and significantly accelerate access to capital markets.

An important step in this direction is the EU Listing Act, a legislative package within the framework of the Capital Markets Union aimed at simplifying IPO and capital-raising requirements. Among other measures, it offers shorter and more standardised prospectuses, adjusted disclosure obligations, and reduced administrative burdens under the Market Abuse Regulation (MAR). Small and medium-sized enterprises as well as Scaleups are intended to benefit in particular from simplified procedures and lower costs. The objective is to make IPOs in Europe more attractive, faster, and more cost-efficient—and thereby channel capital to where it is most needed for growth and innovation (KfW 2024).

A European technology segment with harmonised listing standards and shared order books across leading exchanges—such as Frankfurt, Paris, and Amsterdam—could represent a decisive lever. Such a platform would pool liquidity, increase the visibility of tech IPOs, and bring the Capital Markets Union to life. In this way, Europe could mobilise the growth capital required for its deep-tech and Scaleup companies and take a decisive step toward a truly integrated European capital market.

2. Broadening the equity culture

A central structural weakness of the European capital market lies in the low level of equity market participation among private households. While a significant share of the population in the United States is invested directly or indirectly through funds, pension systems, and ETF savings plans, equity ownership remains comparatively low in Europe. In Germany, for example, fewer than 20% of citizens hold shares or equity funds (Deutsches Aktieninstitut 2024), compared with more than 60% in the United States (Statista 2025). This reluctance leads capital flows in Europe to concentrate more heavily on bank deposits and real estate, while productive equity capital for companies remains limited.

To address this over the long term, a targeted broadening of the equity culture is required. A key lever lies in integrating equity and ETF-based savings into retirement systems—for example through the introduction of funded pension components modelled on Scandinavian or Anglo-Saxon systems. Such approaches could strengthen private retirement provision, increase return opportunities for citizens, and at the same time create stable, long-term sources of capital for the European corporate sector.

Conclusion:
For Europe to catch up in the area of technology IPOs, coordinated action is required by European stock exchange operators and regulatory authorities, together with the European Commission and national governments. Policymakers should accelerate the Capital Markets Union and establish harmonised listing standards. Stock exchange operators must offer more attractive conditions for technology companies. Institutional and retail investors, in turn, should increase their engagement with innovative enterprises. Only coordinated action across all stakeholders will sustainably strengthen the competitiveness of European capital markets.

E) M&A gap: lack of European acquirers

In addition to initial public offerings, mergers and acquisitions (M&A) represent a key mechanism for enabling share disposals and thereby creating liquidity for founders and investors. This liquidity is typically recycled back into the market and forms an important basis for further investment activity. However, the European market for strategic acquisitions is comparatively weak on the buyer side. Large, well-capitalised companies that deliberately pursue the acquisition of Scaleups to expand technological capabilities or market share are often lacking.
In contrast to the United States and China, Europe has so far not pursued a coherent industrial policy strategy aimed at building national or regional champions through M&A. Moreover, European competition policy applies particularly strict scrutiny to mergers and ac-

quisitions, and many corporations exhibit pronounced risk aversion.

> *"Germany needs stronger exit markets to translate innovation into growth. At present, we see hardly any German buyers once enterprise values exceed approximately EUR 20 million—reflecting a lack of industrial depth and bold acquisition strategies. If we succeed in activating more domestic buyers through well-designed incentives, we can retain capital, expertise, and jobs in the country over the long term."*
>
> ***- Romy Schnelle***
> *Managing Director,*
> *High-Tech Gründerfonds (HTGF)* **-**

Policy Recommendations

1. Tax incentives for M&A

To facilitate mergers and acquisitions, targeted tax incentives for M&A transactions should be introduced. This includes, in particular, the tax deductibility of goodwill—that is, the premium paid in an acquisition above the book value of tangible assets, for example for brand recognition, customer relationships, technological capabilities, or team know-how. At present, this intangible value is only partially tax-deductible in many EU Member States.
In addition, preserving tax loss carryforwards following a change in ownership, as well as allowing the deductibility of transaction and advisory costs, could help reduce tax-related barriers.
Such a policy package would stimulate M&A activity in the start-up and Scaleup segment, improve exit options, and thereby mobilise additional growth capital for the European innovation market.

2. Industry consortia and venture clienting Programmes

Industry consortia for Scaleup investments should be specifically promoted in order to strategically bundle technological capabilities and provide significant capital for growth. The example of the AI start-up Aleph Alpha illustrates how joint investments by companies such as SAP, Bosch, and the Schwarz Group can help address the growth capital gap.

In addition, the expansion of venture clienting Programmes is of particular importance. Venture clienting refers to established companies acting as early customers for start-ups, testing and adopting innovative solutions to gain competitive advantages and accelerate innovation adoption. Venture clienting Programmes can serve as a long-term instrument to close the M&A gap by systematically connecting companies with start-ups and Scaleups and integrating them into value chains at an early stage. This not only creates proof of concept but also establishes a robust business case for potential equity investments or acquisitions.

Conclusion: :
To close the M&A gap, policymakers should introduce targeted tax incentives to encourage investments by leading industrial corporations in Scaleups. At the same time, these corporations are called upon to engage more actively in the growth phase of Scaleups—both as acquirers, through the formation of industry consortia for joint investments, and by contributing their scaling expertise. In this way, capital, resources, and know-how can be pooled to scale innovation and secure value creation in Europe.

> *"For deep-tech Scaleups, collaboration among multiple corporates in the form of an investor consortium represents a highly effective lever: innovations can be scaled more rapidly, resources can be deployed in a targeted manner, and commercial opportunities can be jointly leveraged. This reduces financial risk while simultaneously enabling participating companies to secure access to new technologies—and provides start-ups with stronger market anchoring."*
>
> ***- Deepa Gautam-Nigge***
> *VP Corporate Development & Investments SAP SE* **-**

F) Secondary markets and secondary funds as a liquidity bridge

In addition to full exits through initial public offerings or mergers and acquisitions (M&A), partial exits are becoming increasingly important. They enable founders and investors to obtain liquidity at an earlier stage without fully relinquishing control of the company. This reduces pressure for short-term exits and increases entrepreneurial freedom in pursuing long-term company development. Secondary markets for fund interests likewise allow institutional investors to manage their capital commitments more flexibly. This improves liquidity planning and creates additional incentives to engage more strongly in venture capital.

To facilitate such partial exits, **well-functioning, professional, and liquid secondary markets are required.** Liquidity released at an early stage can, in turn, be reinvested into new start-ups and funds, thereby strengthening capital circulation within the innovation ecosystem.

Policy Recommendations

1. Strengthening the role of secondary and later-stage investors

Institutional later-stage and secondary funds create liquidity and continuity within the investment cycle through large-scale secondary transactions and GP-led solutions (general partner-led solutions). Structured secondary transactions increase predictability, transparency, and professionalism, thereby strengthening the European growth financing market (Apollo Global Management 2024).

In parallel, the establishment of an organised secondary market for VC LP fund interests is gaining importance in order to enhance liquidity and the attractiveness of the asset class for limited partners. In this context, the creation of a marketplace for the trading of LP interests in selected venture capital funds is being explored (KfW 2024). In addition, initiatives such as **Forge Europe**—a cooperation between Forge and the Deutsche Börse—contribute to the professionalisation and transparency of private capital markets through digital trading platforms and liquidity Programmes for pre-IPO shares (Forge 2024).

2. Founder-buyback-models

Founder-buyback-models represent a complementary option. In these structures, founders—potentially supported by long-term debt financing—repurchase company shares from existing investors. This strengthens the founders' long-term ownership position and helps ensure that successful entrepreneurs become key drivers of a new, technology-based Mittelstand. Moreover, this model allows for greater flexibility in ownership structures and can foster both trust and continuity within the company.

Conclusion:
To strengthen liquidity and capital circulation within the innovation ecosystem, private specialised secondary and later-stage funds, as well as stock exchange operators and digital trading platforms, should play a leading role in expanding professional and liquid secondary markets. Policymakers should actively support and incentivise these developments through targeted regulatory frameworks and transparency requirements.

"In addition to traditional exit channels, founder buybacks can represent an attractive option to keep successful companies in private ownership while simultaneously unlocking growth capital—making an important contribution to strengthening the European innovation ecosystem."

- Markus Schillo,
EIF Representative in Germany **-**

5.0 Outlook

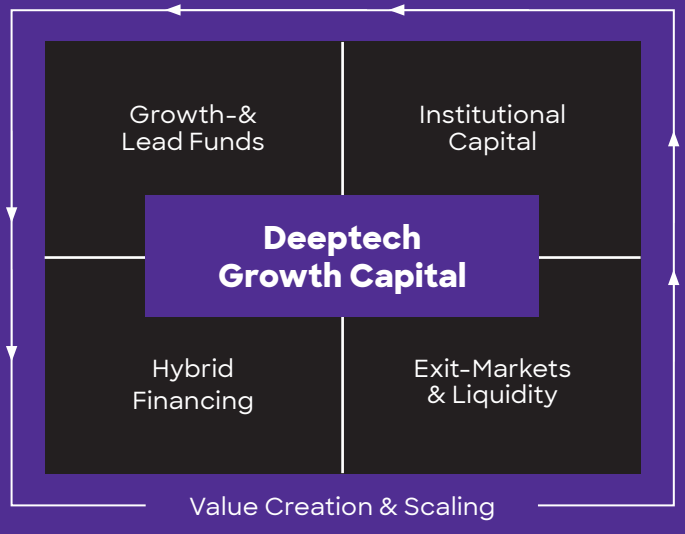
The evaluation of the expert panel clearly indicates that the European start-up and Scaleup ecosystem is at a turning point. While early-stage financing has become significantly more professionalised over recent years and now functions largely reliably, a critical gap emerges from the Series B stage onwards. Europe—and Germany in particular—lacks effective lead investors, large funds with internationally competitive scale, institutional capital, and integrated capital markets. As a consequence, German and European Scaleups frequently seek financing abroad, leading to the long-term relocation of technologies, talent, and value creation to other regions.

At the same time, the panel emphasises that a change of course is possible. Europe can overcome its existing deficits in growth financing if policymakers, investors, and companies act in a coordinated and consistent manner. What is required are European growth funds with professional lead-investor capabilities, regulatory and fiscal frameworks that mobilise institutional capital, as well as transparent fund-of-funds structures and the systematic development of the domestic investor base.

For particularly capital-intensive sectors such as deep tech and hardware, dedicated financing instruments are necessary. These include complex project financing structures built on multiple pillars combining debt and equity components, which go far beyond the traditional start-up venture capital model.

Finally, the exit landscape must be significantly strengthened. This includes the harmonisation of regulatory frameworks, an increased number of strategic acquirers, and the promotion of a broader equity culture. In addition, instruments such as anchor customers, scaled venture clienting Programmes, and professional secondary markets are required to attract and retain capital, talent, and the next generation of founders in Europe over the long term.

The following figure illustrates the key challenges as interconnected building blocks of an overall system. For the effective implementation of the proposed measures, it is crucial that they are not addressed in isolation but advanced within an integrated strategy, as they are closely interdependent. For example, mobilising additional institutional capital is a fundamental prerequisite for enabling more growth funds and new hybrid financing models—yet tangible success can only be achieved if a functioning exit market is in place.
In the long term, growth financing for deep-tech Scaleups must be embedded in economic value creation and scaling. Only in this way can individual measures have a sustainable impact and enable the substantial and frequently emphasised deep-tech potential to contribute to strengthening Germany's and Europe's position as centers of economic activity and innovation.



In implementation, the state should assume a more active role—not as a substitute for private capital and initiative, but as its anchor and accelerator. If Germany and Europe implement the necessary measures decisively, a robust growth financing ecosystem can emerge that mobilises capital, builds trust, retains talent, and strengthens technological sovereignty. The window of opportunity is narrow: those who act now will lay the foundation for a new generation of European technology leaders. **Those who hesitate risk the lasting loss of innovation, value creation, and technological sovereignty.**

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“Europe stands at a turning point in deep tech: the share of deep-tech investments within the European VC landscape has risen to around 44%, and Europe’s share of global deep-tech funding has nearly doubled since 2019. We must not miss this momentum. If we now succeed in building more growth-stage VC funds with lead-investor capabilities for deep-tech Scaleups and boldly activating institutional capital, this could generate substantial value creation by 2030—this is about the next wave of industrialisation. The first limited partners will secure the most attractive positions in a market that is only now beginning to produce global champions.”

- Michael Jobst
Principal Vsquared Ventures ***-***

“We have all the prerequisites in Germany and Europe to play a leading role in deep tech. What start-ups and Scaleups are lacking is growth capital, particularly in the later stages of financing. In this respect, we need to catch up with the United States.

Specifically, this means that we require an integrated system consisting of growth funds with lead-investor capacity, institutional capital, hybrid financing models, and well-functioning exit and liquidity markets. Only in this way can world-class research be translated into global market leaders.”

- Michael Brigl
Head of Central Europe BCG ***-***

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