

Overview of regional innovation strategy

Main facts

Lithuania secured the 35th position worldwide in the Global Innovation Index 2024 and attained the highest growth rate in the EU with an increase of 3.7 percentage points [1], exceeding the EU average of 0.6%. The European Innovation Scoreboard 2024 categorizes Lithuania as a "moderate innovator" with considerable potential for growth [2]. Lithuania's regional innovation strategy aims to convert the nation into a knowledge-driven economy.

Several key ministries and institutions coordinate Lithuania's innovation policy framework. The Ministry of Education, Science, and Sports oversees policies related to research and higher education, whereas the Ministry of Economy and Innovation is responsible for innovation policy, encompassing experimental development. The Strategic Council for Research, Technology, and Innovation facilitates inter-institutional collaboration within the innovation ecosystem and defines essential innovation sectors:

- energy and a sustainable environment
- health technologies and biotechnologies
- agro-innovation and food technologies
- new production processes, materials, and technologies
- smart, green, integrated transport
- information and communication technologies
- Inclusive and creative society

The EU ranks Lithuania in the lower tier for Horizon Europe involvement [3] as it stands at position 23 among 27 member states for total participation but demonstrates excellent resource management and strong research capabilities through quality indicators. The success rate of Lithuania in Horizon Europe applications reaches 16.70% which exceeds the EU average of 13.66%. The research ecosystem demonstrates broad participation through 588 organizations which submitted 3,210 applications. The net EU funding received by Lithuania amounts to €170.9 million which demonstrates effective utilization of European research funding. Small and medium enterprises play an essential role in the program because they account for 28.57% of participation and receive 30.82% of the total funding amounting to €53.76 million.

The research activities in the country are led by two major universities and research organizations: Vilnius University leads with €18.76 million in financial support, Kaunas University of Technology is next with 15.51 million EUR. These organizations serve as the base elements for Lithuania's research structure and international collaboration programs. Lithuania maintains strong research partnerships across Europe through its connections with Spain (1,145 links), Germany (1,003 links) and Italy (1,000 links). The extensive partnership network enhances research quality and facilitates better knowledge sharing opportunities. The research environment of Lithuania demonstrates quality through its participation in prestigious programs which include: 6 principal investigators from the ERC (European Research Council) who achieved outstanding success in leading-edge research and 45 participations in MSCA (Marie

Skłodowska-Curie Actions) demonstrate strong researcher mobility and training programs. Lithuania's research strengths are concentrated in several key areas where the country has achieved international recognition. Physics, particularly photonics, represents a global leadership position with Lithuania being a world leader in scientific lasers [4]. Other strong research areas include material engineering, chemistry, biological sciences and life sciences, clinical medicine, and earth and environmental sciences.

Lithuania displays an unusual innovation pattern through its efficient European research program participation and its domestic R&D investment difficulties. The country's "Moderate Innovator" status in the European Innovation Scoreboard results from its low R&D intensity of 1.0% which stands below the EU average of 2.2%. The innovation system demonstrates a major discrepancy because public sector R&D spending (0.6% of GDP) exceeds private sector research spending (0.3% of GDP) which shows a need for private sector involvement in research activities.

Lithuania's innovation infrastructure stands out through its strong human capital resources and favorable business environment conditions. The country holds the 14th position worldwide for business ease while its 36.3% knowledge-intensive employment rate exceeds the EU average of 29.5% indicating strong potential for innovation-driven economic expansion. The research capacity is sufficient because Lithuania has 3,908 researchers per million population (17th in EU) yet this potential does not translate into sufficient innovation outputs since patent applications and scientific publication impact remain below EU averages. The combination of successful Horizon Europe participation and excellent business conditions and high knowledge-intensive employment points out Lithuania has essential innovation components yet needs strategic measures to boost domestic R&D spending and improve research commercialization. The country demonstrates efficient European funding utilization, yet its complete innovation potential depends on increased private sector R&D investment and better research-to-market transition.

Key stakeholders

Selected smart specialization priorities also define the purpose for most of the EU structural funding for research, development and innovation initiatives in the country. Innovation policy is implemented via several key institutions.

The Research Council of Lithuania advises Parliament and Government on the implementation of the research policy. The Innovation Agency serves as the main institution for innovation policy implementation, while the Government Strategic Analysis Centre (STRATA) monitors national research and higher education systems.

Lithuania has invested significantly in developing innovation infrastructure to support startup development and technology commercialization. The higher education landscape includes 12 state universities, 12 state colleges, and several private institutions, serving over 100,000 students with international students comprising 7% of enrollment [4]. The research infrastructure includes 13 research institutes and employs an average of 8,600 researchers on a full-time equivalent basis [4]. Approximately 50-60% of researchers work in the higher education sector, while around 30% work in the business sector, with the business sector share steadily increasing. The country also supports approximately 2,700 doctoral students annually, ensuring a pipeline of highly qualified researchers.

The Ministry of Economy and Innovation at the beginning of the year 2025 presented economic transformation plan (START), which marks a strategic shift toward a systemic, innovation-driven development model in Lithuania [5]. It emphasizes both the scale and reach of economic

transformation to promote national investments that drive innovation across sectors and regions. A core feature of the plan is the integration of green and digital priorities, seeing eco-innovation and digitalization as main drivers of sustainable competitiveness, capable of reducing costs while enhancing productivity and resilience (both economic and geopolitical). Balanced growth is emphasized as well: innovation is not confined to urban tech hubs but extended to traditional industries and regional economies. Special attention in this plan is given to the development of the startup ecosystem, application of the AI and defense.

Startup Lithuania as a part of Innovation Agency operates under the Ministry of Economy and Innovation and functions as the official startup ecosystem facilitator [6]. The organization role includes ecosystem coordination, policy advocacy, and international promotion of Lithuanian startups. Also, Startup Lithuania and Innovation Agency provides comprehensive support services including business development assistance, networking opportunities, access to funding programs, and international market entry support for startups and other companies.

Since 2016 Lithuania has implemented numerous initiatives specifically designed to support startup development and innovation commercialization., some of the specialized programs were aligned with EU priorities. E.g. The ESA BIC Lithuania (European Space Agency Business Incubation Centre) focuses on space and earth-based applications, providing financial support and technical guidance for startups in areas such as earth observation, satellite navigation, and robotics [6]. Similarly, the Lithuanian Business Incubation Centre of CERN Technologies, established in 2018, supports the commercialization of technologies developed at CERN.

Regulatory environment and business support

Lithuania has become the fastest-growing startup ecosystem in Central and Eastern Europe due to its successful policy framework. The country stands ready to establish itself as a leading European deep tech hub because of sustained government support for innovation alongside increasing regulatory adaptability and international reputation growth. The regulatory system provides perfect conditions for AI and biotechnology along with fintech and other advanced technology companies which benefit from both tax incentives and flexible regulatory structures. The deep tech sector in Lithuania benefits from an innovation system that supports research through commercialization and scaling and operates in an environment of attractive regulatory and tax policies. European businesses here can benefit from one of the most beneficial research and development tax incentive packages available in the continent which promotes technological development.

The R&D tax benefit mechanism for businesses includes a triple deduction system which allows full deduction of 300% of R&D expenses (excluding depreciation costs) during the year of expenditure. The substantial advantage from R&D investments is supplemented by accelerated depreciation policies for R&D fixed assets which increase financial benefits for companies building innovation infrastructure. Companies must meet two conditions to access these incentives by conducting R&D work that serves their normal business activities and maintaining detailed documentation for their projects which proves tax compliance and shows R&D expenses [7].

Under the Patent Box Regime system, companies can apply a reduced corporate income tax rate of 6% on profits derived from the commercial exploitation of patented inventions. This regime applies to copyright-protected computer programs and inventions that comply with patentability criteria and are protected by patents or supplementary certificates issued by the European Patent Office or member states of the European Economic Area. Income must be earned

by the Lithuanian operation that developed the property to ensure that benefits support local innovation efforts [8].

Lithuania also provides major tax advantages to companies that make large capital investments in eligible assets through its investment project incentive program. The program allows businesses to deduct their taxable profits entirely from actual acquisition expenses of qualifying long-term assets that fulfill certain criteria. Relief exists for expenses between 2009 and 2028 which enables businesses to make long-term investment plans [7].

The Government of Lithuania created specific financial benefits to support early-stage businesses and startup companies. The tax system in Lithuania promotes business startups through numerous programs that drive innovation and business development. Small businesses that qualify can obtain a one year exemption from corporate income taxes which gives them essential financial assistance when building their business. The country supports its digitalization efforts through tax benefits that encourage companies to invest in digital transformation initiatives.

Index Ventures identifies Lithuania as having the best employee stock option program regulations across Europe [9]. The favorable regulations help startups attract and maintain talent since deep tech companies heavily depend on specialized technical staff. The positive stock option regulations help startups expand through offering competitive compensation packages which connect employee interests with business achievement [9].

The intellectual property protection framework in Lithuania includes strong intellectual property protection laws, integration with European Patent Office systems, comprehensive support for patent application processes, and robust copyright protection for software and digital innovations.

Lithuania has as well adopted regulatory changes that aim to establish an environment which supports innovation. The government has set up regulatory testing areas in multiple sectors. E.g. financial services represent the primary example to let innovative businesses test new products under controlled regulatory frameworks [10]. Moreover, EU has identified Lithuania as its first nation to introduce an artificial intelligence testing environment called an "AI sandbox" [11]. Other example: the Ministry of Energy has created proposed amendments to the Republic of Lithuania Law on Energy to establish a regulatory sandbox for testing energy innovations and technologies [12] and the energy innovation sandbox Ignitis Innovation hub was established. Fintech sandboxes are established by both public and private entities, the financial market national regulator Bank of Lithuania and several private market big players as Swedbank, SEB, Credit Info. The first proptech sandbox in the world RealBox by PropTech Baltics [13].

Medtech, greentech and agrifood sectors

Medtech. Lithuania has successfully established itself as a competitive MedTech hub in Europe, combining technical excellence with strategic advantages in regulation, talent, and infrastructure [14]. The presence of innovative companies like Sentante and Oxipit, coupled with strong government support and international investment, positions the country for continued growth in the global MedTech market. The MedTech sector currently contributes approximately 2.7% to Lithuania's GDP, with ambitious targets to reach 5% by 2030. Fueled by a 22% average annual growth rate in life sciences, Lithuania ranks highly in the EU—Vilnius and Kaunas are among the top three MedTech hubs in Europe. Key strengths include AI-powered medical imaging, robotic surgery, diagnostic technologies, 3D printing, sensors, and laser applications. Lithuania is emerging as a leader in autonomous radiology AI and precision diagnostics through the

integration of software engineering and healthcare expert. The MedTech investment landscape has seen strong growth in recent year from 1.49 million EUR in 2022 to over 12 million EUR in 2024. Notable investment rounds: Sentante: 6 million EUR seed round (2023) [15], Biomatter 6.5 million EUR seed round (2024), Spike: 3.2 million seed round (2024). Kaunas, the Lithuania's second-largest city, is a medtech epicenter, fueled by the engineering talent emerging from Kaunas University of Technology. The institution consistently produces engineering graduates skilled in medical device development [16].

Greentech. The greentech/cleantech sector of Lithuania continues to be one of the most promising areas in Europe and is mature, economically impactful sector with long-term potential and it reflects a clear evolution from emerging technologies. Invest Lithuania highlights the strong investment, ambitious renewable energy targets, and policy environment that is conducive to the green transition of the country [17]. The country received more than €812.5 million in cleantech investments since 2017, with a record of a 70% increase in 2023 compared to the previous year and the sector has attracted more than 170 companies that are engaged in various forms of sustainability such as renewable energy, sustainable transportation, energy efficiency, and environmental technologies [18]. Lithuania is one of the countries in Europe with the highest level of ambition in the green transformation. It aims to achieve: 100% renewable electricity consumption by 2028 and 95% renewable energy across all energy use by 2050. As of 2024, the current performance indicates that 70% of Lithuania's total energy output is renewable energy which ranks Lithuania 8th in the EU for renewable energy share in total consumption [17]. The strategic roadmap indicates that the country will become a net exporter of renewable energy by 2030 and it will begin the production of green hydrogen in 2025 to become a key player in the EU's green energy future. The greentech sector of Lithuania is supported by 812.5 million EUR invested since 2017 110.35 million EUR raised in 2023 alone. A community of 60 active startups and scaleups working across energy, mobility, and sustainability sectors [17]. The success stories of PV case, Green Genius, and HeavyFinance are a sign that Lithuania has the potential to develop greentech solutions that are globally competitive and at the same time help to achieve European climate goals [19].

The government of Lithuania has put in place multiple measures to encourage the growth of green investments in the country. LT100 Green Investment Support Scheme allocates more than €696 million to green technology and renewable energy projects [17]. Green Corridor Initiative offers 0% corporate tax for 20 years on large-scale green investments, in addition to simplified procedures for obtaining permits and faster decisions from public authorities [17]. GreenTech Hub is a government-backed resource center that was established within the Innovation Agency, serving as a one-stop-shop for companies undergoing the green transition [19]. Lithuania actively works with European partners to develop green technology. GreenTech 2.0 functions as an EU-wide greentech cluster network that connects Estonia, Sweden, Finland, Poland, and Lithuania to promote technology exchange along with joint innovation and expanded market reach [20].

Sustainable economic growth together with international green economy leadership emerges from Lithuania's ambitious targets combined with government incentives and deep talent pool and integrated infrastructure. Lithuania advances toward becoming a net renewable energy exporter. The cleantech sector presents a crucial investment opportunity for venture capital funds because market advantages and governmental backing create an ideal environment for innovation-based growth. European innovation ecosystem investors choose Lithuania because it offers regulatory sandboxes and competitive tax incentives and sectoral focus on cleantech development. The energy sector positions Lithuania best to capitalize on upcoming developments

particularly in hydrogen technology. The Baltic Sea region holds large hydrogen reserves while the government has set hydrogen sector expansion targets for 2030 which positions Lithuania as a suitable location for emerging energy breakthroughs.

Agrifood. There are 89 Food and Agriculture Tech startups in Lithuania which include PIXEVIA, Heavy Finance, Last Mile, Deeper Sonar, Farmis. Out of these, 25 startups are funded, with 4 having secured Series A+ funding [21]. Over the past 10 years, an average of 4 new companies have been launched annually. Notably, several of these startups have been founded by alumni of University College London. The sector's institutional framework, led by AgriFood Lithuania DIH and supported by strong educational partnerships, provides a solid foundation for continued growth and development [22]. The presence of innovative companies like Leafood and Heavy Finance demonstrates the sector's potential to create globally competitive solutions while addressing critical challenges in sustainability and food security [23]. Government support, European Union partnerships, and access to international markets create favorable conditions for continued expansion and success. The sector's prospects appear strong, with growing global demand for sustainable agricultural technologies and Lithuania's proven ability to develop innovative solutions.

Lithuania's agrifood tech sector focuses on several key technological areas that address both current industry challenges and future opportunities [24]. The primary emphasis lies in developing models based on shared economy principles, promoting service-based approaches rather than traditional asset acquisition models. The strategic vision encompasses creating a green and digital agrifood sector built on four foundational pillars: sustainable agriculture practices, comprehensive digital traceability systems, circular food systems that minimize waste and maximize resource efficiency, and targeted nutrition solutions that address specific health and dietary requirements [23]. The sector demonstrates particular strength in precision agriculture technologies, including IoT-based monitoring systems, AI-driven crop management solutions, and advanced data analytics platforms. These technologies enable farmers to optimize resource utilization, improve crop yields, and reduce environmental impact while maintaining economic viability. Vertical farming and controlled environment agriculture represent another significant focus area, with companies like Leafood pioneering innovative approaches to urban agriculture and sustainable food production [24]. These technologies address critical challenges related to land use efficiency, water conservation, and year-round production capabilities.

Strengths and capacities of the regional ecosystem

Lithuania's startup ecosystem demonstrates remarkable strengths across multiple dimensions, from human capital and infrastructure to financial resources and institutional support. These strengths have contributed to the ecosystem's extraordinary growth and international recognition as one of Europe's most dynamic innovation hubs. The valuation of the startup ecosystem in the country has risen from 419 million EUR in 2014 to more than 16 billion EUR in 2024, indicating a 39-fold growth and positioning it as the quickest expanding startup ecosystem in Central and Eastern Europe [25]. Nonetheless, omitting Vinted and Nord, Lithuanian startups have expanded 31 times over the past decade, significantly surpassing the European standard of 9 times. Lithuania ranks second in enterprise value per capita in CEE [25]. The Lithuanian startup landscape shows notable advantages, such as a well-educated labor force and robust governmental backing via numerous innovation programs.

According to the EIS Lithuania's advantages are:

- job-to-job mobility of human resources in science and technology;

- population with tertiary education;
- non-research and development (R&D) innovation expenditures;

Human capital

Lithuania's most significant competitive advantage in the worldwide innovation sphere emerges from its outstanding human capital resources. The country has developed an exceptional workforce that includes multilingual and technically skilled personnel, which makes it a suitable base for innovative ventures, particularly those in deep-tech areas.

The national education system of Lithuania serves as a powerful mechanism to develop top-quality talent. The national higher education institutions enroll more than 100,000 students with 7% consisting of international students [4]. The educational environment demonstrates both strong domestic student enrollment and global student interest. The country maintains its position as world leader in the percentage of women with advanced degrees [1] and demonstrates an environment that welcomes both gender diversity and inclusivity.

Lithuania shows strong progress in STEM education as it holds the second position in the EU regarding STEM tertiary student enrollment [1] where 25% of students major in science technology engineering or mathematics. Among OECD nations Lithuania demonstrates second position for tertiary education efficiency together with third position for biotechnology R&D spending intensity [1] which proves both the quality and focus of its innovation development. The gender balance in science and technology is high in Lithuania which ranks among the top OECD countries with 49% women in scientific fields [1]. The balanced gender distribution between male and female participants creates a diverse dynamic system for innovation development.

The annual enrollment of doctoral students in Lithuania totals 2,700 while full-time equivalent researchers' number 8,600 with 50–60% working in the higher education sector and 30% in the business sector [2]. The scientific talent supply remains stable because researchers can perform advanced research and support industrial R&D while launching scientific startups. Academic institutions also serve as innovation enablers. Universities deliver specialized programs which follow industrial requirements, e.g. specialized 9 fintech programs by different providers as well as Bloomberg Financial Markets Labs at Kaunas University of Technology or Moody's Lab at ISM University which offer professional-grade tools and methodologies for finance and risk management to students [26].

The ICT industry of Lithuania has developed an essential number of skilled workers who started their careers as startups and now lead the expanding startup ecosystem as founders or early employees or advisors [26]. According to global rankings Lithuania leads all nations for digital skills availability while it stands as the worldwide leader in ICT usage and mobile app development [1]. E.g. the ecosystem supports more than 70,500 ICT professionals in addition to 90,000 finance experts and 12,000 compliance and risk management specialists and 7,400 professionals working in the fintech sector [26]. The deep tech, fintech, AI, biotech and advanced manufacturing industries benefit from a large professional talent pool which meets their technical and regulatory requirements.

The multilingual talent pool functions as a primary element which enables Lithuania to maintain its position as a global competitor. Most Lithuanian students develop native level English skills and numerous individuals become proficient in German and Russian and additional European languages [26]. The language abilities of this workforce enable better international

business development together with customer support functions and cross-border partnerships and market expansion activities which drive success for globally minded startups and scale-ups.

The foundation of Lithuania's innovation success depends on its high-quality education system alongside its technical depth and gender balance and international orientation. The country provides an outstanding workforce through its combination of STEM education and research activities and ICT and finance expertise that creates ideal conditions for deep tech development and high-growth startups and cross-border innovation partnerships. Lithuania maintains its position as Europe's innovation leader through its strategic human capital development approach which prepares the country for increasing talent competition in the global market.

Innovation infrastructure and support

The Lithuanian innovation ecosystem delivers comprehensive support for startups throughout their entire growth process. The infrastructure includes specialized facilities with advanced research equipment together with various services which enable technological development and commercialization. The innovation environment functions through a developing network of incubators and accelerators and science parks and co-working spaces that deliver mentorship along with affordable workspace options and business development resources to early-stage companies [6].

Startup Lithuania stands as the national startup ecosystem facilitator which drives the entire infrastructure of this environment and as the primary government interface for startup support, providing business development assistance, networking opportunities, and access to various government programs [6]. Through its partnership with international organizations Startup Lithuania platform serves both domestic and international startup companies. The Startup Lithuania Accelerator powered by Plug and Play represents a flagship initiative which developed through collaboration with Silicon Valley-based Plug and Play. The 2024 program supported 24 startups through which 64 founders from 15 countries received assistance [6],[27].

Other programs:

- The B2B accelerator and early-stage VC 70Ventures offers milestone-based investments from 20,000 to 400,000 EUR through its structure. Through this program startups receive two elements: a scalable sales model and Nordic and Western European market access.
- Startup Wise Guys operates as a CEE-focused accelerator in Lithuania that delivers B2B SaaS and Fintech and Cybersecurity and Sustainability solutions. The program provides both investment of up to 30,000 EUR and a 3-month structured educational program.
- Baltic Sandbox functions as a platform which provides both soft-landing services and acceleration to startups that want to enter Western markets while focusing specifically on sustainability and impact-based businesses.
- Katalista Ventures operates as a Vilnius-based hybrid accelerator that provides funding through its early-stage VC fund to develop business models which integrate environmental and social impact goals.
- Futurepreneurs operates as a pre-acceleration program that encourages sustainable entrepreneurship through UN SDG-aligned mentorship along with investor connection opportunities.

- The Lithuanian accelerator Accelerator One uses corporate funds to give customized mentorship together with corporate partnership opportunities while investing up to 50,000 EUR in startups.

Specialized incubators serving distinct purposes:

- Through the ESA BIC Lithuania program startups receive assistance for upstream space technologies as well as downstream earth-based applications. The ESA Business Incubation Centre network offers funding along with mentorship and technical support to businesses working with robotics and satellite navigation and artificial intelligence.
- The Dual-Use Tech VC Fund & Accelerator “Scale Wolf” accepts applications for NATO-aligned technologies such as cybersecurity and AI and autonomous systems. The fund offers investments ranging from 50,000 to 1 million EUR as well as market connections and strategic collaboration between European and American markets.
- The Lithuanian Business Incubation Centre of CERN Technologies provides commercialization support for CERN technologies through licensing assistance combined with 40 hours of expert consultation and financial grants and scientific guidance from science parks Sunrise Valley and Kaunas STP.

Regional initiatives:

- Startuolis project in central and western Lithuania received a total €979,567.09 funding that included €832,632.03 from EU sources for its 2024 to 2027 implementation period. Through its programs of hackathons and pre-acceleration and incubation the project works to decrease the innovation gap between Vilnius and other areas of the country [6].
- Startups from south can access the regional Startup LAB Alytus which functions as a Sunrise Tech Park facility to help local innovation development.

Lithuania provides its deep-tech sector with essential startup support through its scientific excellence in photonics and material engineering as well as chemistry and clinical medicine and biological sciences fields [2].

- The Vilnius City Innovation Industrial Park (VCIIP) serves as a 24-hectare innovation hub for biotech and smart technologies that functions as part of the Life Sciences Digital Innovation Hub.
- The Intechcentras serves as Lithuania's main Digital Innovation Hub for Industry 4.0/5.0 which provides advisory and prototyping assistance to more than 300 industrial companies in automation and AI and digital twins domains.
- The Bio City Project will establish itself as Europe’s biggest biotechnology hub at Vilnius through Northway Group leadership with a 7 billion EUR investment announcement made in 2023 [2]. The project includes 17 companies specializing in medicine and biotech and pharma that receive backing from private investors and development loans.
- The European Molecular Biology Laboratory (EMBL) Partnership selected the Life Sciences Centre at Vilnius University for genome-editing research when it established its

partnership in 2020. Lithuania now stands as a primary life sciences contributor across Europe [2].

Public sector initiatives:

- The GovTech Lab Lithuania operated under the Innovation Agency provides startups with help to address public sector issues through challenge-based innovation programs which support their MVP development and governmental pilot testing needs.
- The Lithuanian Innovation Centre (LIC) delivers complimentary assistance to startups when they need help with EU and Horizon Europe funding applications as well as intellectual property management and international collaboration.
- The greentech sector benefits from the LT100 Green Investment Support program with €696 million allocated and the Green Corridor initiative providing favorable tax treatment [28].

Vilnius and Kaunas are main locations, especially for deep tech startups [29]. Vilnius is home to over 1,050 startups with a combined enterprise value of €15.4B. Vilnius has seen an 8.1x growth in enterprise value since 2019 and attracted €123M in VC investment in 2024. Key sectors include Fintech, Transportation, and Security. Kaunas is rapidly emerging as a startup hub, with strengths in software products and life sciences. The city has over 180 startups with a combined enterprise value of €816M, showing an 11x growth since 2019.

Lithuania offers attractive programs for international entrepreneurs and skilled workers, also including streamlined immigration procedures and access to business support services [26]. These programs help attract international talent and investment to the Lithuanian ecosystem, enhancing its global competitiveness.

Investment landscape

The financial ecosystem of Lithuania advances as a top startup environment in the CEE region because it combines various VCs, angel investors and government backing. Venture capital investors active in Lithuania have increased from only 18 investors in 2014 to reach 86 in 2024, thus reducing their dependence on single funding sources [30]. The startup investor Vestbee states that there are about 20 venture capital firms (local and international) that currently fund Lithuanian startups [32]. The growing investment landscape brought more strategic and international investors to the Lithuanian startup ecosystem. However due to geopolitical instability the total investment in the Lithuanian startup sector decreased to 270 million EUR in 2023, which is a 14% decrease from 2022. Investor confidence remains positive even though this decrease occurred. The leading investment vertical of the year (2023) was greentech, which captured 37% of startup funding. Startups in Lithuania received €128 million in total funding in 2024, making it the second-highest performing CEE country [30]. Venture capital investments for early-stage startups reached €108 million which established a new second-best funding record for the country [30]. Lithuania placed third in fintech VC investment and second in blockchain VC investment within the CEE region in 2024, further establishing its position as a key technology center [30].

The following local VC firms have been instrumental in this growth:

- Baltic Sandbox Ventures operates as the first deep tech and life sciences-focused VC fund in the Baltics since 2022 with a fund size of 10 million EUR . The company provides essential funding to address a significant funding gap within early-stage innovation.
- 70Ventures provides funding to B2B startups that must demonstrate export capabilities and growth milestones.
- Practica Capital stands as the leading early-stage VC firm throughout the Baltics by supporting the growth of scalable technology startups.
- Iron Wolf Capital supports early-stage startup growth through investments in fintech, SaaS, and deep tech ventures.
- FIRSTPICK operates as a VC fund and accelerator which provides pre-seed and seed funding to new founders through its program.
- Open Circle Capital operates as a Lithuanian venture capital firm which supports early-stage technology startups with B2B solutions that have growth potential. Focus on ICT including AI, fintech, robotics and cybersecurity.
- Contrarian Ventures operates from Vilnius to invest in climate-tech and sustainable energy startups. Supports early-stage companies that develop energy transition solutions together with mobility systems and smart infrastructure and carbon reduction technologies.
- Coinvest Capital operates as a government-backed co-investment fund which works with private investors to support early-stage Lithuanian startups. The fund provides private capital matching at a minimum 1:1 ratio which decreases risk for angel investors and institutional investors. The fund supports all sectors.
- Katalista Ventures operates as a hybrid accelerator and venture fund located in Vilnius which focuses on sustainability-driven startups. The fund supports Lithuanian founders who create mission-oriented companies within fintech and circular economy and health and green technology sectors. The organization uses ESG criteria and impact measurement throughout the early growth stages of companies.
- Gamedev Fund operates as a Lithuanian venture fund which provides financial support to independent game developers. The fund provides pre-seed and seed funding to early-stage studios which operate mainly in Lithuania and throughout the CEE region. The fund provides both financial support and strategic guidance

Foreign venture capital firms have also shown strong confidence in Lithuania's startup ecosystem, actively participating in funding rounds and supporting high-growth companies. These investors bring not only capital but also international expertise, market access, and credibility to the local innovation landscape. Prominent foreign investors in Lithuania include: General Catalyst (US), Accel (US), Network VC (US), Novator (GB), Speedinvest (AT), Eurazeo (FR), Piton Capital (GB), OpenOcean VC (FI), OTB (PL)), ByFounders VC (DK).

The angel investment network in Lithuania develops at the same pace as the institutional VC market. Startups need these networks to access seed capital while receiving mentorship and strategic guidance before VC funding becomes available. The first financial investors who validate business models and help prepare companies for institutional funding are typically angel investors.

- LitBAN (Lithuanian Business Angel Network) provides a platform for startups to connect with angel investors who seek various sector opportunities. In 2023 the

organization maintained more than 300 members and facilitated early-stage investments worth millions.

- Angels Band provides a platform that matches startups with certified business angels for pre-seed and seed funding opportunities.

The Lithuanian government established various financial instruments to promote innovation and minimize risks during early-stage investment. These instruments serve deep tech and green tech startups well because they need substantial upfront capital for development alongside extended periods before commercialization [33].

- The government provides loan guarantees which improve bank financing access for companies.
- The government supports seed and growth stages through co-investment programs that match VC or angel investments.

Success stories

Lithuania's startup ecosystem has produced numerous success stories that demonstrate the viability and potential of the innovation environment. The ecosystem's success stories span multiple sectors, demonstrating the breadth and diversity of Lithuanian innovation capabilities. Lithuanian unicorns operate in various sectors including e-commerce, cybersecurity, and online classifieds [34]. This sector diversity reduces the ecosystem's dependence on any single industry and provides multiple pathways for startup success. The 2024 funding landscape demonstrates continued strength and diversity of Lithuanian startups, major funding rounds included significant investments across different sectors, illustrating the breadth and depth of Lithuania's startup ecosystem [35]. These diverse funding successes across different sectors demonstrate the ecosystem's maturity and ability to support companies in various industries. Lithuanian startups have achieved notable success in international markets, with many companies generating most of their revenue from exports. This international orientation reflects both the necessity of expanding beyond the small domestic market and the capability of Lithuanian entrepreneurs to compete globally [25].

According to Startup Lithuania, the country is associated with nine unicorns, including three official unicorns: Vinted, Nord Security, and Baltic Classifieds Group. These companies have achieved billion-dollar valuations and serve as proof points for the ecosystem's ability to produce globally competitive companies. Among the unicorns operating in Lithuania, the Baltic Deep Tech report mentions [30] Flo Health, a company that has recently achieved this status, which is developing a women's health app based on artificial intelligence. Nearly two-thirds of its team is based in Vilnius. Wargaming, one of Europe's leading video game companies, also has its largest studio in Vilnius. Another unicorn associated with Lithuania is Kayak, a travel planning platform. The technology centre of this company in Kaunas is responsible for many development and support functions of the platform. The most prominent representative of the financial sector on this list is Revolut, a banking startup with 45 million customers. It received its first financial service provider license in Lithuania, which became the basis for the company's rapid growth. Today, Revolut has more than 250 team members in Lithuania. Cloud banking startup Mambu is also closely linked to Lithuania and has an engineering center with around 100 employees in the country. They have contributed significantly to the company being listed among the unicorns. The report [30] also links Unity, a well-known video game development platform founded in Copenhagen, to Lithuania. This unicorn has concentrated a significant part of its operations in

Vilnius, with around 140 employees. According to this year's Dealroom report [30], the value of the Lithuanian startup ecosystem reaches EUR 13.7 billion and has grown as many as 7 times since 2018. The ecosystem consists of almost 600 startups that have raised investment.

Sector specialization

Lithuania has developed specific strengths in several technology sectors where the country has competitive advantages and has achieved international recognition. The fintech sector stands out as the most important area of specialization because Lithuania has established itself as a leading fintech hub in the Baltic region and broader European market [26]. The 2024 funding data shows Lithuania took the third position in Central and Eastern Europe for fintech venture capital investment [30]. The sector benefits from supportive regulatory frameworks and has attracted significant international investment and attention. The research capabilities of Lithuania serve as a basis for technology commercialization across multiple key domains. The country's position as a world leader in photonics and laser technology along with its robust material engineering and chemistry capabilities enables deep tech startup opportunities in these fields [2]. The blockchain sector demonstrates a competitive advantage for Lithuania because it secured the second position in Central and Eastern Europe for blockchain venture capital investment during 2024 [4]. The ecosystem shows its capacity to transform into new technological trends and build expertise in developing fields.

The life sciences and biotechnology sector show increasing strength because of powerful university research programs and major infrastructure investments such as the Bio City Project [4]. Startups in this sector gain additional resources and credibility through their participation in the European Molecular Biology Laboratory partnership and other international collaborations.

Digital infrastructure

Lithuania has invested heavily in digital infrastructure, creating an enabling environment for technology companies and digital startups. The country's advanced telecommunications networks and high-speed internet connectivity support international business operations and remote collaboration. The government's commitment to digital transformation and e-government services creates opportunities for startups developing digital solutions and demonstrates the country's technological capabilities to international partners and investors [10]. Lithuania's strong performance in digital skills and technology adoption provides a competitive advantage for startups requiring technically skilled employees and digitally savvy customers. This digital readiness facilitates the development and adoption of innovative technology solutions [10].

Gaps and weaknesses of the regional ecosystem

Despite Lithuania's remarkable success in developing a dynamic startup ecosystem, several significant gaps and weaknesses limit the ecosystem's potential and create challenges for startup growth and scaling. The Science Council of Lithuania, in its report, identifies key challenges in the country's science, technology, and innovation (STI) policy. After evaluating the strengths, weaknesses, threats, and opportunities of Lithuania's STI landscape, the Council highlights the following core issues:

- Inconsistency in STI policy – a lack of stable, long-term direction undermines strategic development;

- Disconnection between STI and broader RDI (Research, Development, and Innovation) policy – STI initiatives are not sufficiently integrated with national research and innovation priorities;
- Lack of strategic orientation – STI efforts often lack coherent planning, measurable goals, and long-term vision;
- Insufficient funding – current financial support does not meet the needs of an evolving and competitive research and innovation ecosystem.

These challenges are outlined in the Council's strategic roadmap for the development of Lithuania's research infrastructure, presented in 2024 [36]. For deep tech startups these limitations could be enriched with the challenges of markets access, talent availability, and institutional capacity®ulation and funding gaps. Deep tech startups face particular challenges related to longer development timelines, higher capital requirements, and the need for specialized expertise and facilities. According to Science Business analysis, the Lithuanian ecosystem may be less well-equipped to support companies requiring substantial upfront investment and extended development periods [37].

Funding gaps and access to capital

The country still encounters difficulties in accessing funding at higher levels compared to Western European startup ecosystems. Startups must develop cross-border investment strategies along with international business development capabilities to obtain the necessary funding for growth-stage expansion. The startup landscape in Lithuania has made recent progress yet the biggest structural problem continues to be the shortage of funding available for companies moving past their initial development phase. Lithuania received 128 million EUR in total startup investment in 2024 making it the second-largest startup investor in Central and Eastern Europe The investment climate appears strong based on this number, yet a detailed analysis reveals obstacles which limit the ability to foster sustainable long-term startup growth in the ecosystem.

The startup ecosystem of 2024 showed a significant pattern where bridge and extension rounds dominated seed stage funding because startups failed to achieve performance goals needed for Series A funding [30]. The startup environment currently operates in "survival mode" instead of developing growth and internationalization plans which could damage their long-term market position and success.

The pre-seed funding environment has also weakened, with the number of such rounds falling to their lowest levels in recent years [30]. The decline in angel investment activity, following the boom period of 2021–2022, has further exacerbated this gap, leaving early-stage innovators without the crucial initial funding needed to move from ideation to prototyping and market validation.

A 2024 study conducted by Science Business identified scaling as the primary obstacle deep tech startups face in Lithuania [37]. These organizations need extensive periods along with substantial funding to create advanced innovations which can reach commercial markets. The growth of venture capital investments in Lithuania is ongoing yet the sector remains underdeveloped. Practica Capital became the largest seed fund investor in the Baltics when it closed a 80 million EUR fund in 2024. The regionally notable amount falls short of international benchmarks because Mistral a French AI startup received 113 million USD in a single seed round at the same time.

The funding pattern that focuses on early stages leaves a significant funding vacuum before Series A and growth periods, particularly for the tickets between 3 to 10 million EUR. Local capital providers fail to meet the funding requirements of Lithuanian startups which have outgrown their domestic support yet lack enough scale and market presence to attract institutional international investors [37]. The transitional bottleneck acts as a major barrier to growth particularly for deep tech sectors which require significant capital investment.

Public funding instruments continue to act as a fundamental force for deep tech development across Lithuania. Government grants and co-investment schemes serve as essential tools to support startups through all stages of development, especially R&D phase. The funding instruments deliver non-dilutive capital to support research and development and prototype development and market entry efforts when private investors remain cautious about risk.

The effectiveness of public resource distribution alongside their distribution patterns remain subjects of ongoing discussion. How might public policy in Lithuania be adjusted to more effectively support the scaling of the most promising startups, rather than distributing resources broadly across a wide range of early-stage ventures? How to ensure that there is no “dry” period between instruments.? Additionally, in addressing talent-related challenges, how can the ecosystem incentivize STEM professionals—who often opt for stable corporate roles—to take on the risks of entrepreneurship, while also encouraging members of the diaspora to return and contribute to the country’s innovation landscape?

These fundamental structural problems get worse due to external uncertainties from market fluctuations and geopolitical tensions which result from the Ukrainian war. The Baltics recorded deep tech investments totaling 90.3 million USD in 2022 after a rise from 69.4 million in 2021 USD but the amount remains much lower than Western European levels. The majority of deep tech funding during early stages relied on government grants and accelerator funding but there are indications of development as local VCs and angel investors gain expertise in deep tech and start investing at earlier stages. The 2024 data indicates that numerous startups face limited follow-on funding opportunities because bridge rounds serve as a replacement for actual growth investments [30].

The Lithuanian investment ecosystem, while growing rapidly, still lacks the depth and sophistication of more mature markets. According to the funding analysis, while the number of investors has grown from 18 to 86 over the past decade, the ecosystem still lacks specialized sector expertise and large-scale growth capital funds [31]. The limited number of experienced investors means that startups may have fewer options for finding investors who understand their specific sectors or business models. This limitation is particularly challenging for startups in complex or emerging technology areas. Limited follow-on investment capacity means that successful startups may struggle to raise subsequent funding rounds from existing investors. This limitation can create challenges in maintaining investor relationships and may force companies to seek new investors for each funding round. The absence of large-scale growth capital funds means that Lithuanian startups seeking substantial late-stage funding must look to international markets, potentially requiring relocation of key operations or acceptance of less favorable terms.

[Access to international markets](#)

The numerous benefits of Lithuania do not eliminate its disadvantage of having a smaller home market than leading EU economies. Most deep tech companies need to start internationalization strategies early because of their small domestic market while business-to-consumer applications

have restricted local customer potential. The small domestic market requires companies to develop export market strategies for growth from their initial development phase.

The startup growth and revenue generation potential of Lithuania is restricted by its small domestic market which contains fewer than three million people. The limited market size forces startups to expand internationally before they would need to do so in larger markets [25].

Resource-constrained startups encounter multiple difficulties when they decide to expand internationally at an early stage. Rokit Vilnius analysis shows that companies need to handle various regulatory frameworks and cultural preferences and business practices across multiple markets which demands stretched management attention and financial resources [38].

The multiple markets within Europe present additional obstacles for Lithuanian startups who want to expand their operations abroad. The European Union's single market framework does not eliminate the ongoing differences between member states regarding their regulations and tax systems and employment laws and business practices [38], e.g. for med tech startups a separate certification is necessary at different European countries.

The absence of well-developed distribution networks and partner relationships in target markets presents extra challenges for Lithuanian startups. Lithuanian startups face the challenge of establishing new international relationships because they lack the domestic partner networks which larger market companies already possess.

The Baltic states demonstrate strong startup funding performance but their ability to develop companies into later stages remains limited because of market size restrictions and early international expansion needs [39]. As well Lithuania faces increasing competition from other emerging innovation hubs in Central and Eastern Europe and beyond. Countries such as Estonia, Poland, and Czech Republic are also developing strong startup ecosystems and competing for the same pool of international investment and talent [39].

The country's relatively small size and limited international brand recognition can make it challenging to attract attention from international investors, customers, and partners. Lithuanian startups may need to invest more heavily in marketing and business development to achieve the same level of recognition as companies from more prominent markets [25].

The lack of globally recognized anchor companies in certain sectors limits Lithuania's ability to attract related ecosystem development. While the country has achieved success in areas such as fintech and cybersecurity, other important technology sectors lack prominent Lithuanian companies that could serve as magnets for talent and investment [40].

Talent shortages and skills gaps

The strong educational system and developing technology sector of Lithuania face particular talent shortages and skills gaps that limit startup development and expansion. The fast expansion of technology in Vilnius TechFusion analysis shows that it creates fierce competition for experienced staff which drives up salaries and makes it challenging for new startups to recruit top talent [41]. The demand for specialized technical skills in artificial intelligence and machine learning and blockchain and advanced cybersecurity exceeds the available supply. The production of general technical graduates in Lithuania remains strong but the country lacks sufficient specialized expertise to develop advanced technology.

The Lithuanian talent pool lacks sufficient management and business development expertise. Technical professionals in Lithuania often lack experience in international business development and fundraising as well as strategic partnerships and scaling operations. The Vilnius TechFusion report [41] shows that initiatives are being developed to address these challenges,

including programs focused on AI integration in early-career training and business-academia partnerships for real-world project experience. These initiatives remain in their initial development phase and have not resolved the current talent shortages.

The market lacks qualified sales and marketing professionals who can handle international sales activities in Lithuania. The country's brief transition to market economy status has resulted in fewer sales and marketing professionals compared to established market economies. The competitive talent market creates ongoing difficulties because it allows established corporate employers to compete for skilled professionals while brain drain occurs when employees move to larger European markets that offer higher compensation packages. Companies need to establish ongoing talent development programs while controlling salary expenses from international competition to build and sustain their technical workforce.

Access to research infrastructure and specific services

While Lithuania has developed substantial innovation infrastructure, gaps remain in specialized facilities and services that are crucial for certain types of startup development. Deep tech startups, in particular, often require access to expensive specialized equipment and facilities that may not be available domestically [41]. Deep tech startups face challenges related to accessing specialized research facilities and equipment necessary for technology development and validation. While Lithuania has strong research institutions, the availability of cutting-edge facilities for private sector use may be limited. The availability of specialized professional services, such as intellectual property law, international tax planning, and regulatory compliance consulting, is limited compared to larger markets. This limitation forces startups to either accept lower-quality services or seek expensive international expertise. Technology transfer mechanisms between universities and the private sector, while improving, remain less developed than in leading innovation ecosystems. The processes for licensing university-developed technologies, establishing spin-off companies, and facilitating researcher entrepreneurship could be more streamlined and effective.

Regulatory challenges

Startups face ongoing regulatory and bureaucratic hurdles which hinder their growth and international expansion efforts despite recent progress. Lithuanian startups encounter specific obstacles when expanding internationally because of the complicated regulatory frameworks which exist between European markets [38].

The employment regulations that are business-friendly present certain problems for startups who need to employ international talent or expand their operations across multiple countries. Small companies face major administrative challenges in handling employment compliance requirements between different geographic jurisdictions. The absence of defined regulations for emerging technological domains including artificial intelligence blockchain and digital assets presents difficulties to startups that develop innovative solutions within these fields. The absence of specific regulatory structures prevents product compliance development which results in investment challenges.

A unified start-up ecosystem across the continent would be possible through EU-wide legal status creation thus enabling start-ups to minimize legal and regulatory and employment framework differences when expanding abroad. Standardizing European regulations would

enable startups to dedicate our resources to expansion and innovation instead of dealing with complex regulatory systems.

Specific needs for local startups

Lithuanian startups face a unique set of challenges and requirements that reflect both the opportunities and constraints of operating within a small but dynamic European Union member state. Different technology sectors face unique challenges within the Lithuanian ecosystem. The fintech sector, despite its success, faces increasing regulatory complexity and competition from both domestic and international players. New fintech startups must navigate an increasingly crowded market and more stringent regulatory requirements. Deep tech startups face particular challenges related to longer development timelines, higher capital requirements, and the need for specialized expertise and facilities, for sustainable R&D they need a substantial upfront investment and extended development periods. Life sciences and biotechnology startups face challenges related to regulatory approval processes, clinical trial requirements, and the need for specialized facilities and expertise. Despite major infrastructure investments such as the Bio City Project, the limited domestic market for healthcare solutions forces these companies to pursue international expansion earlier than might be optimal. Green tech startups benefit from specific government support programs such as the LT100 Green Investment Support and the Green Corridor initiative, but also need additional support for technology validation and market development.

Funding and investment

The funding situation for Lithuanian startups shows promise but the country faces major obstacles to get beyond early-stage financial support. The two primary obstacles that Lithuanian entrepreneurs face are the limited capital availability. The funding provided through grants proves essential for deep tech startups that need significant initial funding before starting their revenue generation phase. Deep tech companies specifically encounter major funding hurdles because they need substantial investments to extend their development periods and conduct market validation tests.

The pre-seed funding environment has become increasingly difficult because angel funding from the 2021-2022 boom period has vanished almost completely. The funding shortage creates an essential funding gap for startups which need initial capital to create prototypes and prove market demand and construct their initial teams. There is a major problem related with business angel taxation: in Lithuania, forming an angel syndicate can lead to double taxation, as both the syndicate vehicle and individual angels are taxed separately on the same investment returns. According to a Lithuanian professional co-investor, this issue prompts them to avoid syndicates and resumes in decreasing initial ticket size.

The Civitta report [42] shows that Baltic venture funding has expanded dramatically starting from 2017 specifically during the pre-seed and seed stages. Local VC activity together with public funding initiatives has allowed numerous startups to start their business operations and gain early business success. But only about 4-5 percent of the startups that receive funding reach significant milestones through increased funding amounts and employee growth and worldwide expansion. The statistics demonstrate that startups now have better access to initial funding but encounter substantial obstacles when they try to expand into growth and scale-up stages which require Series A or B funding.

The funding acquisition process requires founders to spend 23 investor pitches on average to secure one successful investment round [42]. The high costs associated with transactions reveal that the capital-matching system contains performance problems that may stop certain founders from exploring growth opportunities.

Study [42] reveals that startups led by serial founders who possess experience obtain significantly better funding success rates especially when targeting international investors. The research indicates that institutional trust together with founder credibility act as essential elements that determine how much funding startups receive.

The funding needs of Lithuanian startups that do not match traditional venture capital standards can be met through alternative funding solutions. Companies that demonstrate strong revenue capabilities but lack venture capital appeal can benefit from revenue-based financing and convertible debt instruments and government-backed loan guarantees. Lithuanian startups require international funding access to expand their operations beyond local markets. Companies require assistance to find international investors while learning about foreign investment customs and preparing for global fundraising procedures.

Market access

The market accessibility remains a major challenge for Lithuanian startups both at home and abroad. The small Lithuanian market forces companies to begin their international expansion early which makes the process of market development highly complex thus requiring specialized support and expertise. The analysis from Rokit Vilnius shows that Lithuanian startups must handle different regulatory systems while working with diverse cultural elements and business conventions across various markets which exhaust their limited resources and management capabilities [37]. The requirement to enter international markets early creates major operational challenges for companies that operate with limited resources.

The process of customer discovery together with validation stands as a vital requirement for initial startup stages to determine market needs and improve their value propositions. The strong technical abilities of many Lithuanian business founders do not extend to market research methods or customer interview skills or product-market fit validation techniques.

International market entry assistance proves vital for Lithuanian startups which aim to penetrate markets outside their domestic territory. Companies require help to conduct market research and follow regulations as well as build distribution channels and adapt to cultural requirements of their target markets. European markets present additional challenges due to their fragmented structure despite the existence of the single market framework [15]. B2B startups need pilot program facilitation services to conduct essential validation tests with their potential customers. Large corporations and government agencies implement elaborate procurement procedures that make it challenging for small startups to understand.

Talent acquisition

Startups in Lithuania encounter major difficulties when trying to acquire and keep the talent needed to grow and expand their businesses. The fast technology sector expansion in Vilnius TechFusion analysis results in high competition for experienced staff which raises salaries beyond what early-stage startups can afford to pay for top talent [41]. The workforce shortage extends to specialized technical skills which include artificial intelligence and machine learning and blockchain and advanced cybersecurity. The country delivers skilled general technical graduates yet lacks sufficient specialized knowledge for developing cutting-edge technology.

The recruitment of international talent stands as an essential requirement for Lithuanian startups which need specialized skills that local markets do not provide. Companies require assistance to handle visa and work permit procedures along with help to understand employment rules for foreign employees and to create compensation packages that will draw international talent.

The Lithuanian talent pool lacks sufficient expertise in business development management as well as in business leadership. Technical professionals generally lack experience in business development at the international level as well as fundraising and strategic partnerships and operational scaling [41].

The market of Lithuania lacks sufficient expertise in sales and marketing especially when it comes to international markets. Lithuania's market economy development timeline results in fewer sales and marketing experts available compared to more established economies [41].

Technology development and innovation

The specific technology development resources and specialized expertise which Lithuanian startups need are not available within their companies. Startups developing innovative technologies need to establish research and development partnerships with universities and research institutions as their essential operational requirement.

According to Science Business analysis, deep tech startups encounter difficulties when trying to obtain specialized research facilities and equipment required for technology development and validation [37]. The research institutions in Lithuania demonstrate excellence but private sector access to advanced facilities might be constrained.

Startups that produce physical products or need specialized equipment need laboratory and testing facilities to access in order to succeed. The implementation of simplified testing access systems coupled with reasonable price structures would enable startups to access needed development and testing facilities.

Startups need intellectual property development and management support to protect and commercialize their innovations. Entrepreneurs frequently demonstrate poor understanding about patent procedures together with trademark registration processes and intellectual property strategic development.

The transfer of technology from research institutions to startups presents a vital business opportunity for innovation commercialization. The university research programs in Lithuania remain strong yet the transfer processes need more efficient and streamlined approaches [4].

Regulatory compliance and legal

Small Lithuanian businesses must deal with complex regulatory requirements which create substantial administrative challenges because they have restricted resources. The regulatory compliance needs of startups in regulated industries or innovative product development require essential support services for regulatory guidance and compliance. Startups need international regulatory compliance support to establish operations in several markets which have distinct regulatory needs. The analysis of expansion challenges shows that businesses require direction regarding product certification requirements and target market regulatory approval steps as well as continuous compliance duties [41].

Startups must obtain employment law compliance support when they hire staff members throughout various international territories. The combination of diverse employment laws and

social security requirements and tax obligations generates significant administrative work for companies during their growth phase [41].

Every startup handling personal data needs data protection and privacy compliance support because it represents a fundamental requirement. The complexity of GDPR and other privacy regulations requires specialized expertise that may be expensive for small companies to access.

Barriers for women and minorities in accessing innovation support services

The Gender Gap Index shows Lithuania ranks as the ninth best country worldwide because it supports gender inclusion through its educational systems and work environments [1]. Lithuania's inclusive talent strategy attracts global investors while building fair startup opportunities that create adaptable workforces in new industries.

The Lithuanian startup environment ranks high in gender equality metrics but women along with minority groups face substantial challenges when trying to access complete innovation support resources. Systemic issues together with particular institutional constraints require targeted solutions to overcome these obstacles. The Lithuanian businesswomen face unique barriers while seeking mentorship along with advisory services during their entrepreneurial journey. The Vestbee research found that the top 25 women leaders in Lithuania's VC and startup ecosystem have inadequate female mentorship because successful women leaders are scarce [43]. The report shows successful women who lead in venture capital and startup creation and ecosystem management yet the authors observe that women remain underrepresented in these leadership roles than men. The current technical and deep tech sector shows an extreme shortage of female leaders because women remain underrepresented in these fields. The current investment readiness and fundraising support services lack proper solutions to help women entrepreneurs address their specific needs. The typical fundraising and training programs lack solutions that address the gender-specific obstacles and discriminatory practices which women face when meeting investors.

The technology sector continues to present enduring challenges to women entrepreneurs who seek technical validation along with credibility establishment. Women must dedicate extra time to develop technical expertise because they face extra scrutiny about their technical skills when interacting with customers and partners and investors.

Lithuania operates as a mostly uniform society which hinders minority group participation. The small number of different ethnic groups in Lithuania prevents minority entrepreneurs from getting vital community assistance which supports business success. English serves many business needs but certain Lithuanian regulatory and administrative and legal procedures require fluency in the local language. The professional networks and business relationships of minority entrepreneurs remain restricted because they do not possess established connections within Lithuanian business communities. Business relationship development and trust-building becomes challenging for entrepreneurs who lack connections to established social and professional networks. EU minority entrepreneurs encounter particular difficulties when managing legal and regulatory matters. Business registration procedures with work permit processes and visa requirements and tax obligations need specialized knowledge which minority entrepreneurs typically do not have access to.

The existing initiatives to help women entrepreneurs in Lithuania operate with limited scope and size. Through European Union funding the EmpoWomen program assists deep tech startups run by women but its support reaches only 25 companies throughout multiple countries

during two years [44]. Due to its limited capacity the program cannot provide specialized assistance beyond a minimal number of women who require it. The EWA (Entrepreneurial Women Accelerator) delivers its support to 10 women entrepreneurs who run food and agricultural innovation businesses in Lithuania throughout 2024 [45]. The food and agricultural initiative for women innovators shows positive results yet remains limited in its ability to assist women entrepreneurs beyond this specific sector.

Women business owners face difficulties because there are few women-focused support programs that are insufficient in scale so they must use general support services which might not meet their requirements. The absence of specialized support services hinders the ecosystem from achieving its full potential in empowering women to start businesses. The Lithuanian innovation ecosystem fails to provide dedicated programs for minority entrepreneurs because there exist no targeted initiatives that address the special challenges faced by ethnic and cultural minorities. The absence of focused support services leads to a significant shortcoming in the ecosystem's ability to incorporate diverse groups of innovators. The absence of a complete diversity and inclusion strategy within Lithuania's innovation ecosystem results in multiple disconnected approaches to address obstacles faced by women and minority groups. The absence of systematic policy frameworks prevents diversity considerations from becoming standard components in innovation support programs and policies.

References

- [1] WIPO. (2024). Retrieved from <https://www.wipo.int/gii-ranking/en/Lithuania>
- [2] Lithuania Co-create. (2024). Retrieved from <https://lithuania.lt/news/business-and-innovations-in-lithuania/lithuania-achieves-highest-growth-in-eu-in-innovation-ecosystem-reports-european-innovation-scoreboard-2024/>
- [3] European Commission. (2025). Retrieved from https://dashboard.tech.ec.europa.eu/qs_digit_dashboard_mt/public/extensions/RTD_BI_public_HE_Country_Profile/RTD_BI_public_HE_Country_Profile.html?Country=LT#r_d_landscape
- [4] UK Science and Innovation Network. (2025). UK Science and Innovation Network Summary: Lithuania. Retrieved from <https://www.gov.uk/government/publications/lithuania-uk-science-and-innovation-network-summary/uk-science-and-innovation-network-summary-lithuania>
- [5]. Ministry of Economy and Innovation of Lithuania. (2025). Retrieved from <https://eimin.lrv.lt/lt/ziniasklaidai/naujienos/pristatytas-lietuvos-ekonomikos-transformacijos-planas-start/>
- [6] Startup Lithuania. (2024). Incubators and Hubs. Retrieved from https://www.startuplithuania.com/eco_type/incubators-hubs/
- [7] Ministry of Finance of Lithuania. (2024). Tax Incentives for Investment and Innovations. Retrieved from <https://finmin.lrv.lt/en/competence-areas/taxation/tax-incentives-for-investment-and-innovations/>
- [8] PWC Lithuania. (2025). Corporate Tax Credits and Incentives. Retrieved from <https://taxsummaries.pwc.com/lithuania/corporate/tax-credits-and-incentives>
- [9]. Change Ventures. (2025). Retrieved from <https://www.changeventures.com/resources/option-regulation>
- [10] Invest Lithuania. (2024). Talent. Retrieved from <https://investlithuania.com/why-lithuania/talent/>

[11] . Retrieved from <https://eimin.lrv.lt/en/structure-and-contacts/news-1/lithuania-accelerates-development-of-artificial-intelligence-by-creating-a-sandbox-to-test-the-technology/>

[12] Ministry of Economy and Innovation of Lithuania. Retrieved from <https://enmin.lrv.lt/en/sectoral-policy/research-and-innovation-in-the-energy-sector/regulatory-sandbox-for-the-energy-sector/>

[13] Emerging Europe.(2024). Retrieved from <https://emerging-europe.com/analysis/worlds-first-propotech-sandbox-opens-lithuania/>

[14] Invest Lithuania. (2025). MedTech Sector Overview. Retrieved from:<https://investlithuania.com/medtech/>

[15] EU-Startups. (2023). Lithuanian medtech Sentante secures €6 million. Retrieved from: <https://www.eu-startups.com/2023/12/lithuanian-medtech-sentante-secures-e6-million-to-revolutionize-how-endovascular-care-procedures-are-performed/>

[16] BioPharma Trend. (2023). How Lithuania's Deep Tech Ecosystem Is Fueling the Country's Life Sciences Boom. Retrieved from: <https://www.biopharmatrend.com/post/710-how-lithuanias-deep-tech-ecosystem-is-fueling-the-countrys-life-sciences-boom/>

[17] Invest Lithuania. (2024). Scale your Cleantech in Lithuania. Retrieved from <https://investlithuania.com/cleantech/>

[18] Balčiūnė, L. (2025, June 10). Lithuania's Cleantech Ecosystem 2024: 170+ Companies Driving Competitiveness and Resilience. LinkedIn. Retrieved from <https://www.linkedin.com/pulse/lithuanias-cleantech-ecosystem-2024-170-companies-driving-bal%C4%8Di%C5%ABn%C4%97-reqjc>

[19]. Ministry of Economy and Innovation of Lithuania. (2024, July 31). GreenTech Hub helps companies adapt to change. Ministry of the Economy and Innovation of the Republic of Lithuania. Retrieved from <https://eimin.lrv.lt/en/structure-and-contacts/news-1/eimin-greentech-hub-helps-companies-adapt-to-change>

[20] EU-Startups. (2024, January 29). Why should we invest in GreenTech cluster exchange programs? Best practices and lessons learned. Retrieved from <https://www.eu-startups.com/2024/01/why-should-we-invest-in-greentech-cluster-exchange-programs-best-practices-and-lessons-learned-sponsored/>

[21] Tracxn. (2024). Top startups in Food and Agriculture Tech in Lithuania. Retrieved from https://tracxn.com/d/explore/food-and-agriculture-tech-startups-in-lithuania/_ForJ085PgZQtce8lf9VmU9fX138yC775dcnyVQ4vkZM/companies

[22] AgriFood Lithuania DIH. (2024). About Us - AgriFood Lithuania DIH. Retrieved from <https://www.agrifood.lt/en/about/>

[23] EIT Food. (2024). Lithuania - EIT Food. Retrieved from <https://www.eitfood.eu/in-your-area/lithuania>

[24] TechRound. (2024). 10 Lithuanian Startups To Watch In 2024. Retrieved from <https://techround.co.uk/news/10-lithuanian-startups-to-watch-in-2024/>

[25] Startup Lithuania. (2024). Lithuania Tech Ecosystem Report 2024. Retrieved from <https://www.startuplithuania.com/wp-content/uploads/2025/01/Lithuania-Tech-Ecosystem-Report-2024.pdf>

[26] Invest Lithuania. (2024). Talent. Retrieved from <https://investlithuania.com/why-lithuania/talent/>

- [27] Startup Lithuania. (2025). Retrieved from <https://startup-lithuania-accelerator.pnptc.com/>
- [28] Ministry of Energy of Lithuania (2025). Retrieved from <https://enmin.lrv.lt/en/sectoral-policy/research-and-innovation-in-the-energy-sector/regulatory-sandbox-for-the-energy-sector/>
- [29] Dealroom. (2023). Retrieved from <https://en.ain.ua/2025/01/29/lithuanian-dealroom-report/>
- [30] Dealroom. (2024). Retrieved from <https://dealroom.co/reports/lithuania-tech-ecosystem-report-2024>
- [31] Failory. (2024). Venture Capital Firms in Lithuania. Retrieved from <https://www.failory.com/blog/venture-capital-firms-lithuania>
- [32] Vestbee. (2023). Retrieved from <https://www.vestbee.com/blog/articles/vc-funding-in-CEE-report-1q-2023>
- [33] Ministry of Economy and Innovation of Lithuania. (2024). Innovation Policy. Retrieved from <https://eimin.lrv.lt/en/sector-activities/innovation/innovation-policy>
- [34] Tracxn. (2024). Unicorn Startups in Lithuania. Retrieved from https://tracxn.com/d/unicorns/unicorns-in-lithuania/_MqqTYQpms3Zdt99rMUzg_Cb1dQFwoSH2pkmm50LJgnY
- [35] Silicon Canals. (2024). Lithuanian startups raised country's largest funding. Retrieved from <https://siliconcanals.com/lithuanian-startups-raised-countrys-largest-funding/>
- [36] Lietuvos Mokslo Taryba. (2024). Lietuvos Mokslo Infrastruktūrų kelrodis. Retrieved from <https://lmt.lrv.lt/lt/naujienos/lietuvos-mokslo-taryba-pristato-lietuvos-moksliniu-tyrimu-infrastrukturos-kelrodi/>
- [37] Science Business. (2024). Scaling: next big challenge for Lithuania's deep tech startups. Retrieved from <https://sciencebusiness.net/news/research-and-innovation-gap/scaling-next-big-challenge-lithuanias-deep-tech-start-ups>
- [38] Rokit Vilnius. (2024). Bridging gaps: Marijus Andrijauskas on Lithuania's startup expansion. Retrieved from <https://www.rokitvilnius.com/post/bridging-gaps-marijus-andrijauskas-on-lithuania-s-startup-expansion>
- [39] Tech.eu. (2024). Baltic states continue to punch above their weight in startup funding. Retrieved from <https://tech.eu/2024/09/05/baltic-states-continue-to-punch-above-their-weight-in-startup-funding/>
- [40] Startup Lithuania. (2024). New overview of the startup ecosystem: 9 unicorns already associated with Lithuania. Retrieved from <https://www.startuplithuania.com/news/new-overview-of-the-startup-ecosystem-9-unicorns-already-associated-with-lithuania/>
- [41] Vilnius TechFusion. (2024). Beyond hiring: what are the initiatives shaping the future of Lithuania's tech industry? Retrieved from <https://vilniustechfusion.com/en/news/beyond-hiring-what-are-the-initiatives-shaping-the-future-of-lithuanias-tech-industry/>
- [42] Civitta. (2024). The Baltic Startup Scene: Today's Realities, Tomorrow's Possibilities. <https://civitta.com/news-insights/the-baltic-startup-scene-todays-realities-tomorrows-possibilities-2>
- [43] Vestbee. (2022). Top 25 Women From VC and Startup Ecosystem In Lithuania. Retrieved from <https://www.vestbee.com/blog/articles/top-25-women-from-vc-and-startup-ecosystem-in-lithuania>

[44] Startup Lithuania. (2023). Empowering Women-led Deep-Tech Startups with EmpoWomen. Retrieved from <https://www.startuplithuania.com/news/empowering-women-led-deep-tech-startups-with-empowomen/>

[45] EIT Food. (2024). Third edition of EWA programme welcomes ten women entrepreneurs in Lithuania for 2024. Retrieved from <https://www.eitfood.eu/news/third-edition-of-ewa-programme-welcomes-ten-women-entrepreneurs-in-lithuania-for-2024>