REPORT 2024/2025

Global Entrepreneurship Monitor Luxembourg

GEM

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Executive summary

Entrepreneurship is widely recognised as a key driver of job creation, technological advancement, and economic growth. As a result, policymakers worldwide design programs to support and encourage entrepreneurial efforts. Since 1999, the Global Entrepreneurship Monitor (GEM) initiative studies entrepreneurship and provides evidence for policy actions. To these purposes, GEM collects data through surveys that are conducted annually in many countries. These data provide insights into entrepreneurial activities, features and traits of entrepreneurs, and entrepreneurial ecosystems. Luxembourg joined the GEM project in 2013. Since then, GEM Luxembourg's country reports present unique information on entrepreneurial activities in the country.

GEM Luxembourg 2024/2025 describes the state of entrepreneurship in Luxembourg in a comparative perspective. It documents the evolution of entrepreneurship in Luxembourg over time, focusing on key indicators of entrepreneurial intensity, provides information on the 1features of the entrepreneurs, on the quality of entrepreneurial endeavours, and on the country's entrepreneurial environment. Recent years have been marked by multiple shocks: the COVID-19 pandemic, the emergence of geo-political conflicts and international trade disruptions. Business uncertainty has increased, slowing down investment and economic growth (STATEC, 2025a). In this context, the report illustrates recent developments in entrepreneurship, and provides up-to-date information on the consequences of the global environment on Luxembourg's entrepreneurs. It also presents evidence on the relevance of sustainability for entrepreneurs, and their views on emerging Artificial Intelligent technologies, themes which are high on the public agenda.

The main takeaways from the Luxembourg GEM report 2024/2025 are as follows:

Entrepreneurial intentions and early-stage activity continued to grow in 2024, confirming the post-pandemic recovery.

- *Early-stage Entrepreneurial Activity (TEA)* increased to 9.9% in 2024, up from the 9.7% observed in 2023, and above the cross-country average (9.4%). This confirms the upward trend observed in last year's report.
- In 2024, *entrepreneurial intentions* reached 20.8%, the highest level recorded in Luxembourg since the start of the GEM series. This reflects a sustained recovery after the pandemic and positions Luxembourg well above the European average (17%).
- *Fear of failure*, which had risen in the post-COVID period, fell significantly in 2024 to 41.4%, its lowest recorded value. This makes Luxembourg one of the countries with the steepest drop in fear of failure, and positions it below the European average of 47.1%.

Yet, growth expectations are weak, pointing to concerns about the economic outlook.

- In 2024, 44% of entrepreneurs reported lower *growth expectations* than the previous year — the highest share among all countries surveyed.
- *Perceived business opportunities* remained broadly stable in Luxembourg (48%), slightly below the 2023 level. This is consistent with declining business sentiment reported by STATEC in 2024.

Luxembourg's entrepreneurs remain opportunity-driven and innovative. They are strongly committed to sustainability, and highly aware of the strategic relevance of digital technologies and AI, despite concerns.

- *The share of necessity-driven entrepreneurs declined in 2024*, indicating a shift towards more opportunity-motivated entrepreneurial activity. Luxembourg ranks 4th among European countries for product innovation among early-stage entrepreneurs. In 2024, 39% of TEA respondents reported introducing novel products or services in their market.
- *Luxembourg's entrepreneurs show a strong commitment to sustainability.* In 2024, 61% of early-stage entrepreneurs reported efforts to minimise environmental impact, and 57% reported efforts to maximise social impact. This places Luxembourg at the very top of the European ranking.
- *Luxembourg's entrepreneurs are highly aware of the strategic importance of AI.* Around 34% of TEA entrepreneurs in Luxembourg consider AI to be very

important for their business model and strategy. Luxembourg ranks first among the countries analysed. This compares to a cross-country average of 22.3%.
- *The share of entrepreneurs who are optimistic, but also concerned about AI, is higher in Luxembourg than in other European countries* Around 68% of TEA entrepreneurs in Luxembourg consider that AI will have a positive impact on productivity and operational efficiency. This is the highest value among the observed countries, and well above the cross-country average of 46%. At the same time, 58% of TEA entrepreneurs believe that AI could have a very negative impact on their business due to data security and privacy concerns, compared to a cross-country average of 45%.

Significant gender and socio-demographic gaps remain.

- *The gender gap in TEA widened in 2024.* Women continue to report lower entrepreneurial intentions and higher fear of failure than men.
- *Immigrants are more likely to engage in entrepreneurship* and report more positive views on the business environment than natives. In 2024, the TEA rate reached 11.7% for immigrants, compared to 7% for natives.

The entrepreneurial ecosystem assessment shows little change, and confirm that it is easy to start a business in Luxembourg, but barriers persist.

- *Entrepreneurs report that it is easy to start a business in Luxembourg.* 61% of entrepreneurs in 2024 agreed that starting a business in Luxembourg is easy. This is stable compared to 2023, but is well above the European average (50.2%).
- *Barriers to entrepreneurship persist.* Entrepreneurs continue to report difficulties in accessing affordable office space, funding, and qualified human resources. These barriers remain the most frequently cited, both by residents and non-residents entrepreneurs.
- The NECI score — that assesses the overall quality of entrepreneurial ecosystems — shows that *Luxembourg's ecosystem remained stable at 4.6 in 2024*, close to the cross-country average. The OECD's Entrepreneurial Ecosystem Diagnostics confirms that Luxembourg features strong institutions and support services, but also persistent constraints related to the size of the market.

Cross-border entrepreneurship is investigated for the first time.

- A *pilot study* conducted in cooperation with the Chamber of Commerce reveals that non-resident entrepreneurs feel well equipped to start a business in Luxembourg. Cross-border and resident entrepreneurs face similar barriers,

though with different intensity. Their main concerns are broadly similar, with office space and funding ranking high for both groups.

Contents

1 Introduction

The Global Entrepreneurship Monitor (GEM) is an international research programme launched in 1999 to study entrepreneurship. For this purpose, GEM collects data through surveys that are conducted annually in many countries. The harmonised cross-country data provide insights into entrepreneurial activities, their impact, characteristics of of entrepreneurs and those of entrepreneurial ecosystems, serving as evidence for policy actions. STATEC joined this endeavour in 2013 in collaboration with Luxembourg's Ministry of the Economy and the Chamber of Commerce. Since then, Luxembourg's GEM reports have provided unique information on the intensity and evolution of entrepreneurial activities in the country. What is more, GEM provides information on individual traits of entrepreneurs, the challenges they face, their attitudes and perceptions, and the context in which they operate, including the policy environment, all in a comparative perspective.

In recent years, the economic environment has been characterised by considerable uncertainty. The outbreak of the coronavirus pandemic in early 2020 represented an unprecedented exogenous shock, which caused a sudden worldwide economic contraction. The recovery that followed has been accompanied by emerging geopolitical tensions and inflationary pressures. Trade tensions and geopolitical instability have intensified in recent months, while climate change and its consequences remain fundamental threats. At the same time, advances in the deployment of artificial intelligence are marking a new wave of technological transformation. All this is reshaping industries and business models. In this environment, entrepreneurship can play an important role in navigating disruptions, adapting to shifting conditions, and capturing opportunities linked to digitalisation, sustainability, and innovation.

The current report describes the state of entrepreneurship in Luxembourg in a comparative perspective. Specifically, it documents the evolution of entrepreneurship in Luxembourg over time, focusing on key indicators of entrepreneurial intensity, including early stage entrepreneurship and established business ownership. It also provides information on the individual characteristics of the entrepreneurs, and on population traits, perceptions and sentiments that shape the entrepreneurial environment in the country. The indicators are compiled using data from Luxembourg's GEM Adult Population Survey (APS) collected over the period 2013 – 2024, and the cross-national dataset harmonised by the global consortium. These data provide the reference points for the assessment of entrepreneurship trends and features in the country. They also help us gauging the consequences of the new global environment on entrepreneurial activities and entrepreneurs.

The report is structured as follows. Chapter 2 presents the GEM conceptual framework, which shapes the data collection and the structure of the report. It also provides a general description of the APS and National Expert Surveys (NES) and of GEM main indicators. Chapter 3 documents the evolution of entrepreneurship

in Luxembourg over time, using data from the 2013 – 2024 waves of the GEM APS. The chapter describes individual features of the entrepreneurs in the country, and also traits, attitudes and perceptions of the general population that shape the entrepreneurial environment in the country. Chapter 3 provides a comparative analysis of entrepreneurship in Luxembourg and Europe using global GEM data, giving additional insights into the country's recent entrepreneurial trends, and impact and quality of entrepreneurship. Chapter 5 uses data from a set of GEM's APS specific questions for Luxembourg to provide information on barriers, enablers and policy initiatives to foster entrepreneurship in Luxembourg. Chapter 6 reports on the 2024 Global GEM's questions on sustainable entrepreneurship. The next chapters present the two special topics for 2024. Chapter 7 gives results from the 2024 Global GEM's special topic on Digitisation and Artificial Intelligence. Chapter 8 documents the outcomes of the pilot study on cross-border entrepreneurship in Luxembourg, carried out in cooperation with the country's Chamber of Commerce. Finally, Chapter 9 illustrates outcomes of the GEM NES, which delivers a qualitative description of the national entrepreneurial ecosystem according to experts' evaluation.

Previously, the GEM Luxembourg report for 2023/2024 had documented the first signs of recovery in entrepreneurial intentions and activity that followed the pandemic. **The current report confirms the recovery and highlight changes in the quality of entrepreneurship.**

The **main results** of the Luxembourg GEM report 2024/2025 are as follows:

Entrepreneurial intentions and early-stage activity continued to grow in 2024, confirming the post-pandemic recovery.

- *Early-stage Entrepreneurial Activity (TEA)* increased to 9.9% in 2024, up from the 9.7% observed in 2023, and above the cross-country average (9.4%). This confirms the upward trend observed in last year's report.
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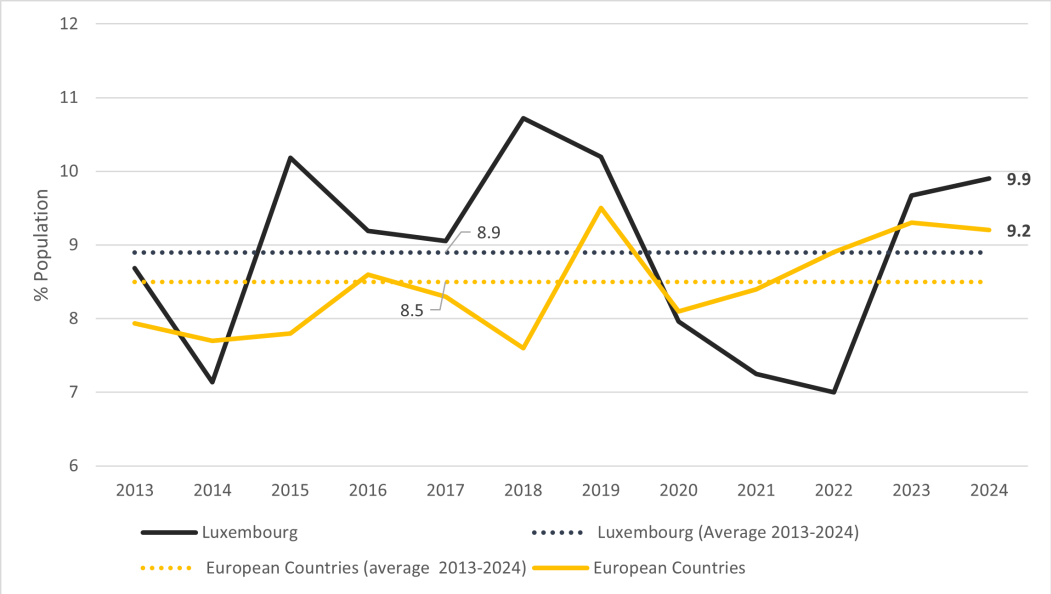
- A *pilot study* conducted in cooperation with the Chamber of Commerce reveals that non-resident entrepreneurs feel well equipped to start a business in Luxembourg. Cross-border and resident entrepreneurs face similar barriers, though with different intensity. Their main concerns are broadly similar, with office space and funding ranking high for both groups.

Finally, what is next provides a visual summary of selected findings of this report. It illustrates key indicators of entrepreneurial activity, and offers an overview of the trends of entrepreneurship in Luxembourg.

Figure 1.1 presents the evolution of the Total Early-stage Entrepreneurial Activity (TEA) rate, the flagship indicator of the GEM framework. TEA measures the share of individuals (of working age) who are either in the process of starting a business or are running a business that is less than 42 months old. The figure compares Luxembourg TEA rate to the European average.[1] We observe that the TEA rate in Luxembourg has fully recovered to pre-pandemic levels. In 2024, TEA reached 9.9%, remaining above the European average of 9.2%. Over the period 2013–2024, the average TEA rate was 8.9% in Luxembourg and 8.5% across European countries.

Figure 1.1: TEA rate in Luxembourg and Europe.



Source: 2013–2024 GEM APS data.

[1] Note that participation to the GEM data collection varies from year to year. The European average in figure 1.1 is constructed using, for each year, the entire sample of European countries that collected APS data in that specific year. As a result, the figure may slightly differ from the European average reported in Table 1.1 and elsewhere in this report, which are based on data for the European countries participating in two consecutive years, namely 2023 and 2024.

Table 1.1 summarises selected key GEM indicators, their changes compared to the previous year, and Luxembourg's rank among European countries.

Table 1.1: Dashboard of key GEM indicators

	Luxembourg		Europe		Luxembourg's Rank	
	2024	2023	2024	2023	2024	Position
1. Perceptions						
Good business opportunities	47.7	49.3	48.4	49.3	10^{th}	🟡
Knowledge and skills	48.8	50.2	51.5	52.1	12^{th}	🟡
Fear of failure	41.4	47.3	47.1	45.4	17^{th}	🟢
2. Activities						
Nascent	15.0	15.7	12.7	11.9	7^{th}	🟡
TEA	9.9	9.7	9.4	9.1	9^{th}	🟡
EBO	4.4	4.2	7.0	7.5	18^{th}	🔴
3. Motivations						
Opportunity-driven TEA	57.9	50.6	42.7	41.7	2^{nd}	🟢
Necessity-driven TEA	37.9	47.2	56.9	58.4	18^{th}	🟢
4. Exit and future intentions						
Discontinued business	3.2	3.1	2.8	2.2	6^{th}	🟡
Future entrepreneurial intentions	20.8	18.9	17.0	15.0	7^{th}	🟡

Source: 2024 and 2023 GEM Global APS data. Note: All figures are expressed as percentages of the adult population, except for opportunity-driven and necessity-driven entrepreneurship, which are shown as percentages of TEA. The column *"Rank"* reports Luxembourg's position among the 20 European countries 2for which data are available for both years. The column *"Position"* indicates Luxembourg's standing in 2024: *front-runner* (top 25%, green dot), *laggard* (bottom 25%, red dot), or *mid-range* (between the 25th and 75th percentiles, yellow dot). For all indicators, being in the top 25% reflects improvement, except for fear of failure, necessity-driven TEA, and business discontinuation, where lower values indicate better performance. Fear of failure indicates, among those who recognise good business opportunities, the proportion that would not start a business due to fear of potential failure. Opportunity-driven TEA and necessity-driven TEA refer to, respectively, the share of TEA entrepreneurs whose reasons for starting a business include the opportunity to make a difference in the world, and who start a business in order to earn a living because jobs are scarce. Discontinued business represents the share of the adult population who have exited a business that has not been continued by any other stakeholders.

2 The GEM research approach

Entrepreneurial activities are essential drivers of job creation, and contribute to generating and diffusing new technologies, thus fostering productivity gains and overall economic activity (Carree and Thurik, 2010). As a result, entrepreneurship is the target of numerous policy initiatives around the world. For example, according to Bai et al., 2022, between 2010 and 2019, worldwide, governments' entrepreneurship finance programs totalled an average cumulative annual budget of 156 billion US dollars. In this context, the Global Entrepreneurship Monitor (GEM) project was established in 1999 at the London Business School (UK) and Babson College (US) to collect data and study entrepreneurship, with the goal of assessing outcomes and impact on economic development, and identifying the conditions for thriving entrepreneurs. Based on qualitative and quantitative surveys conducted by national teams in many countries, GEM provides a harmonised dataset at annual frequency, which enables researchers and analysts to investigate entrepreneurial activities adopting a cross-national perspective. Since its inception, the GEM project has grown from a consortium of 10 participating countries to involving researchers from over 120 different countries. GEM is now regarded as a prominent longitudinal study of entrepreneurship. In 2024, the GEM consortium published its 26th report (GEM, 2024) based on 56 countries participated.[1]

Luxembourg joined the GEM project in 2013. Since then, the two GEM Surveys - the Adult Population Survey (APS) and the National Experts Survey (NES) - have been administered on samples of the country's residents and panels of experts every year. The APS Luxembourg surveys, whose results are documented in this report, have been conducted in May and June 2024 on a sample of 2021 individuals. The NES was conducted in the period July – September 2024.

This chapter presents the GEM conceptual framework — which underpins the data collection and the analysis of this report — and provides a general description of the surveys and GEM main indicators. The framework comprises a definition of entrepreneurship, and a set of multi-directional relations between the entrepreneurial endeavour, the entrepreneurs , and the context. Entrepreneurship itself is seen as a cycle rather than a constant activity of an individual.

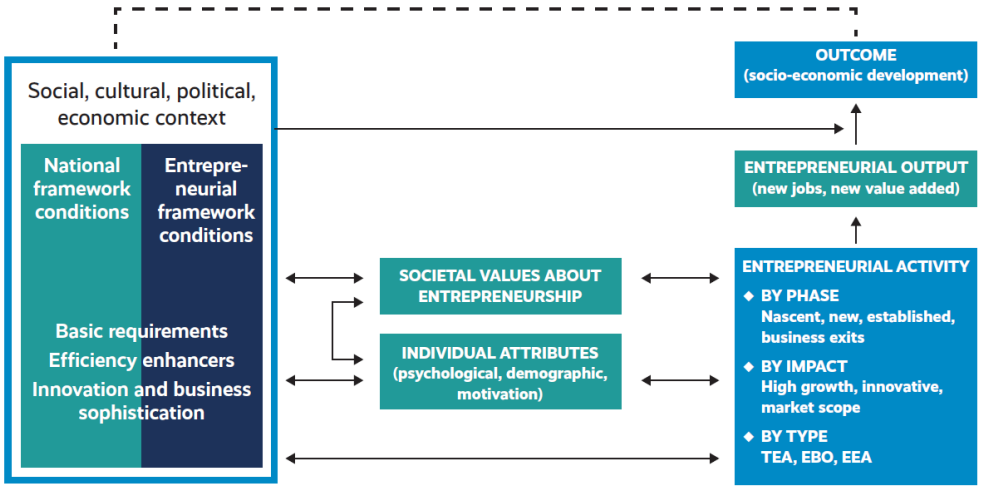
2.1 The GEM conceptual framework

GEM defines entrepreneurial activity as "**any attempt at new venture or new business creation, such as self-employment, a new business organisation or the expansion of an existing business, by an individual, a team of individuals, or an**

[1]Of these, 51 countries took part in the 2024 GEM Adult Population Survey (APS), while five economies participated only in the National Expert Survey (NES).

established business" (Bosma et al., 2020, p.22). Entrepreneurial activity, however, should not be regarded as a purely individual endeavour. One of the main features of the GEM conceptual framework is that entrepreneurial activity does not take place in a vacuum, but rather within the specific context of a given environment, with its own social, cultural and economic characteristics. **Entrepreneurial activity is then jointly determined by the interaction between traits and characteristics of entrepreneurs and the overall "environment"**. In turn, entrepreneurial outcomes affect firm and job creation, innovation, and ultimately economic growth. The GEM conceptual framework outlined in Figure 2.1 portrays the relationship between entrepreneurship and its local, regional and national environment. To provide a comprehensive account of entrepreneurial activity and the context in which it takes place, GEM administers two surveys: the Adult Population Survey (APS) which captures the attitudes, behaviours and expectations of individual adults, and the National Expert Survey (NES) which focuses on the entrepreneurial context (see Section 2.2).

Figure 2.1: The GEM Conceptual Framework



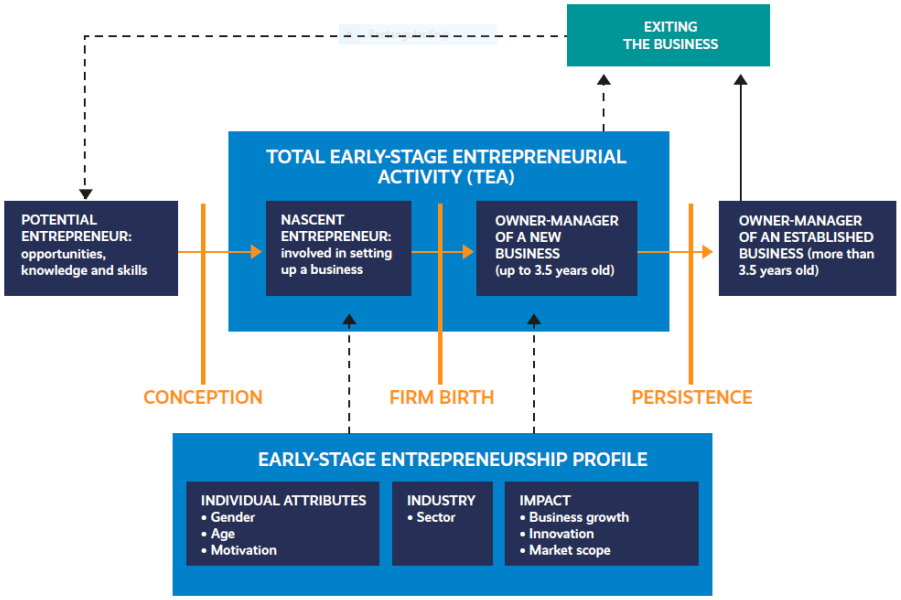
Source: Bosma et al., 2020.

An additional feature of the GEM framework is that **entrepreneurship is described as a "cycle", or *process*** (e.g. Zwan et al., 2010) — "***from conception of entrepreneurial opportunities to its maturity or, alternatively to its demise***" (GEM, 2018, p. 21). GEM surveys are shaped by this framework, and are designed to track people along the entrepreneurship process to provide indicators of entrepreneurial activities. To this end, every person engaged in any activity related to the creation of a new business is regarded as having an impact on the national level of entrepreneurship. Figure 2.2 depicts the entrepreneurial process, and the corresponding operational definitions adopted by GEM for each stage of the process. Individuals along the various stages of the entrepreneurial process are characterized as follows: i) "potential entrepreneurs" are those who plan to start a new business in the next three

years; ii) "nascent entrepreneurs" are those individuals involved in setting up a new business, and who have paid wages (to employers or to themselves) for less than three months; iii) "new entrepreneurs" are owner-managers of firms that have paid wages for a period of time between 3 and 42 months; iv) "established entrepreneurs" are owner-managers of firms that have paid wages for a period longer than 42 months.

The most important indicator produced by GEM is Total Early-Stage Entrepreneurial Activity (TEA). TEA measures the proportion of the working-age adult population actively engaged in starting or running a new business. Specifically, TEA is the sum of "nascent entrepreneurs" and "new entrepreneurs". In other words, TEA reflects the level of entrepreneurial dynamism in a country and represents an overall entrepreneurship rate. Another important indicator is the level of Established Business Ownership (EBO), or the percentage of adults owning and managing an established business, defined earlier as having paid wages or salaries for 42 months or more. If the new business is successful, then it will evolve over time to become an established business. Either the new business owner or the established business owner may exit the business at some stage, and that business may or may not continue without them.

Figure 2.2: Entrepreneurial phases and GEM entrepreneurship indicators



Source: Bosma et al., 2020.

GEM collects information on individuals' entrepreneurial attitudes, activities and aspirations over all the phases of the entrepreneurship process. The focus on individuals differentiates GEM from other statistical sources, in particular from official statistics such as business registers and business surveys. Official records are collected at the firm-level and, as such, they neither measure entrepreneurship *per se* (although

they are linked to it) nor capture attitudes and perceptions of entrepreneurs and potential entrepreneurs. Another limitation of official firm-level data is that they are not fully comparable across countries, because of the differences in countries' laws and institutions (e.g. mandatory incorporation with different turnover thresholds). Moreover, business registers do not record informal business activities and informal investment which might be relevant to assess entrepreneurship rates across countries (Marchese, 2015).

2.2 GEM surveys

The conceptual features of the GEM framework are reflected in the two surveys that are administered annually.

2.2.1 Adult population survey (APS)

The APS is a survey addressed in each country to the population that is between 18 and 64 years old. Each of the participating countries conducts the survey by interviewing a representative sample of at least 2,000 individuals (2,021 individuals in 2024). The fieldwork takes place during the spring/summer of each year. The basic questionnaire is common to all countries participating in the consortium. The questionnaire comprises core questions and modules on special topics, the latter varying every year. The core questions of the APS enquire about individual attitudes and perceptions on whether it is easy to start a business, whether there are good business opportunities, and whether fear of failure is an obstacle. Additional questions focus on whether that person is actively starting a new business or running an established business and what their motivations and ambitions are. Thus, the APS provides a comprehensive depiction of all phases of the entrepreneurial process.

The special modules of the APS have been addressing relevant topics such as immigrant entrepreneurs in 2012 (Xavier et al., 2013), subjective well-being in 2013 (Amorós and Bosma, 2013), family entrepreneurship, etc.. During the pandemic, a special module was administered to monitor entrepreneurial dynamics in 2020, 2021 and 2022. Since 2022, a special module was included to cover sustainability intentions and actions. (included first as special toèic an now includeed all teh years). Because of the relevance of immigration and well-being to Luxembourg, these modules have been retained in the national questionnaire ever since. In 2018, additional Luxembourg specific questions have been included in the questionnaire. They concern barriers and enablers of entrepreneurship , and entrepreneurial policies. In 2024, in cooperation with the House of Entrepreneurship, we conducted a pilot study to explore cross-border entrepreneurship. This refers to individuals

who are not residents of Luxembourg but intend or have started a business in the country. The standard GEM APS questionnaire was slightly modified to record both the country of residence of the respondent and the location of the business.[2] This allowed distinguishing between domestic and cross-border entrepreneurship.

The 2024 questionnaire comprises the following eleven blocks of questions:

1. Nascent entrepreneurs;
2. Owner-managers;
3. Potential and discontinuing entrepreneurs;
4. Informal investors;
5. Employment and entrepreneurial employee activity;
6. Sustainable entrepreneurship ;
7. Digitalization and Artificial Intelligence entrepreneurship (Special topic 202024);
8. Entrepreneurship programs (Luxembourg specific questions);
9. Barriers and enablers (Luxembourg specific questions);
10. Individual perceptions: health; trust; well-being; job satisfaction (Luxembourg specific questions);
11. Immigration (Luxembourg specific questions);
12. Demographics of respondents.

To ensure consistency, the international GEM data team supervises the data collection process. During the field work, raw data are sent regularly to the GEM data team for quality checks. The observations are weighted to ensure that the joint distribution of the gender, age, education and immigration status of the respondents is equal to the distribution of the reference population as recorded in official registers.

Once collected at the country level, national records are harmonized to enable meaningful international comparisons of results. Indeed, a prominent goal of GEM is to collect comparable data to explore cross-country differences in the motivations of entrepreneurs, and to link these differences to job creation rates and economic growth.

2.2.2 National experts survey (NES)

The national experts' survey (NES) provides insights into the entrepreneurial environment in each country. National experts provide information regarding nine Entrepreneurial Framework Conditions that influence entrepreneurial activities.

[2]The relevant questions were: "In which country are you resident ? – Luxembourg, Germany, Belgium, France, Others" and "In which country is this business located? – Luxembourg, Germany, Belgium, France, Other."

They range from the ease of access to finance to social support for entrepreneurship, and from the adequacy of entrepreneurial education to the availability and cost of essential business services. Each of these aspects is evaluated in the NES by a group of four or more national experts, summing up to a total of at least 36 experts per country.

The current report exploits the entire Luxembourg GEM dataset, since its inception to the latest available observations collected in 2024, and cross-country data from the global consortium. The report uses APS data for Luxembourg and 20 European countries, namely Croatia, Cyprus, France, Greece, Germany, the Netherlands, Norway, Hungary, Poland, Lithuania, Latvia, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, and the United Kingdom.[3] Before moving on to present the results, it is important to consider the following caveat when interpreting the data. Throughout the period of analysis, key variables display changes. Some of these variations might reflect structural changes affecting entrepreneurship, others might be the consequences of the pandemic, or other economic shocks, or the effect of randomness, due to sampling across a large population. Whenever possible, appropriate statistical techniques are employed to assess the significance of changes.

[3]Additionally, NES includes Italy, whereas APS data are not available for this country.

3 Entrepreneurship in Luxembourg over time

This chapter describes the evolution of entrepreneurial intensity and environment in Luxembourg from 2013 till 2024. To do so, it uses data from the GEM Adult Population Surveys (APS) conducetd during that period. Entrepreneurial intensity is captured by key GEM indicators such as total early-stage entrepreneurship (TEA) and established business ownership. Entrepreneurial intentions, and respondents' traits, attitudes and sentiments provide additional information on the country's entrepreneurial environment. The chapter also provides information on who are the entrepreneurs in Luxembourg, by investigating how entrepreneurial intensity varies across socio-demographic groups and the motivations of entrepreneurs for starting a business.

The most recent data confirm the recovery in entrepreneurial intentions and early-stage activity, which was first detected by the 2023 survey. This recovery follows the generalised decline observed in entrepreneurship during the pandemic. Indeed, in 2024, 20.8% of respondents identify themselves as potential entrepreneurs, the highest level since data collection began. Early-stage entrepreneurial activity (TEA) shows a rebound to 9.9%, close to its long-term trend and well above the 7% recorded in 2022. Established business owners are at 4.4%, on an overall mildly positive trend. In contrast, business exits increase slightly compared to the previous year.

Indicators of the **business environment** provide a mixed picture. On the one hand, the declining trend in the perception of good business opportunities observed in recent years continues. On the other hand, the share of respondents declaring that it is easy to start a business in Luxembourg is high, and exhibits an overall positive trend. **Fear of failure, which has been gradually increasing after the pandemic, drops to a record low of 41.4% in 2024.**

Personality traits and attitudes of respondents and entrepreneurs are typically more stable over time than outlook and activity indicators. Nonetheless, they provide valuable information to characterise (and capture slowly changing features) of the entrepreneurial environment.

As observed in previous reports, there are persistent gaps in entrepreneurial intentions and activity across socio-demographic groups. Men, individuals with higher education, immigrants, and younger people are more likely to report entrepreneurial intentions and to engage in early-stage entrepreneurship (TEA). In Luxembourg, **the entrepreneurship gender gap continues to exist**, with women less likely to engage in entrepreneurship than men. While earlier data suggested a narrowing of this gap, 2024 records a marked increase in the TEA gender gap.

Plausibly linked to the gender gap, shares of respondents declaring fear of failure are higher for women, who also reports less confidence in their entrepreneurial capabilities. Immigrants show higher propensity to engage in entrepreneurship, and have more favourable views on business opportunities and easiness of starting a business in Luxembourg.

Entrepreneurial motivations have changed, indicating a **decrease in necessity-driven entrepreneurship, suggesting a possible change in entrepreneurial *quality***.

The chapter is organised as follows. Section 3.1 presents the evolution of key indicators of entrepreneurship in Luxembourg over time. Section 3.2 documents entrepreneurial networks, population's traits — such as attitudes to risk and capabilities — and the evolution of perceptions of the business environment in Luxembourg. Considered together, these aspects describe the overall entrepreneurial environment in the country. Section 3.3 describes Luxembourg's entrepreneurs by looking at their socio-demographic characteristics (gender, education, immigration status, and age). Finally, Section 3.4 illustrates the motivations for engaging in entrepreneurship, focusing on the distinction between opportunity-driven and necessity-driven entrepreneurs.

3.1 Quantifying entrepreneurial activity

This section describes **the evolution of entrepreneurial intensity in Luxembourg over time**. It uses data from the 2013 – 2024 waves of GEM's APS, which capture respondents' involvement in the various stages of the entrepreneurial process. Indeed, as seen in Chapter 2, GEM models entrepreneurship as a *process*, whereby entrepreneurs move through the following stages:

1. **Potential entrepreneur**: expecting to start a new business within the next three years;
2. **Nascent entrepreneur**: involved in setting up a business;
3. **New entrepreneur**: owner-manager of a firm younger than 42 months that has paid wages during the last three months;
4. **Established entrepreneur**: owner-manager of a firm that has paid wages for over 42 months.
5. **Discontinued entrepreneur**: owner-manager who has exited a business in the past 12 months, and the business was not continued.

As in an obstacle race, every entrepreneur moves through the stages. At each stage, they can either leave, or continue to the next one in their entrepreneurial "journey".[1]

The indicators depicted in Figure 3.1 represent the shares of population involved in each stage of the entrepreneurial process. As such, they provide insights on the *intensity* of entrepreneurship in Luxembourg, and its evolution over time. The share of **potential entrepreneurs** captures entrepreneurial intentions. **Early-stage Entrepreneurial Activity (TEA)**, which combines information on nascent and new entrepreneurs (that is, stages 2 and 3 of the entrepreneurship process), is GEM's key indicator of entrepreneurial intensity. The share of **established entrepreneurs (EBO)** is another key indicator for assessing entrepreneurial intensity. Lastly, "exit" is the share of those respondents that declare they had exited a business in the last 12 months that did not continue.[2] Exit poses significant challenges for individuals and society, as it involves financial losses for the entrepreneur and stakeholders (such as suppliers and creditors), emotional distress for the entrepreneur, and job losses. At the same time, the literature also notes that it could serve as a learning opportunity, enhancing an entrepreneur's growth aspirations in subsequent ventures, especially for "serial entrepreneurs," in environments where social norms do not stigmatize failure but instead encourage learning from the experience (Hessels et al., 2011). Potential entrepreneurship and business exits are linked to entrepreneurial dynamism.

In 2024, 20.8% of survey participants identified themselves as potential entrepreneurs. This value, above the period average of 18.3%, slightly exceeded the previous peak of 20.4% observed in 2018, marking the highest point in the series and confirming the return of potential entrepreneurship to pre-COVID levels.

Overall, entrepreneurial intensity in Luxembourg had been stable before 2019, featuring a mildly upward trend for TEA and the share of established entrepreneurs. In contrast, the pandemic period marked a generalised decline in entrepreneurship. The Total Early-stage Entrepreneurial Activity (TEA) rate, stable at around 10% until 2019, has been decreasing during the pandemic. It reached a historic low of 7% in 2022, then started recovering and rebounded to 9.9% in 2024, close to its historical trend.

Established Business Ownership (EBO) increased to 4.4% in 2024, up from 4.2% the previous year.

[1] The GEM dataset consists of repeated cross-sections. At every wave of data collection, respondents report their entrepreneurial status, from inactive to exited.

[2] The questions captures the exit of business from markets, distinguishing it from the exit of the entrepreneur.

At the same time, the share of individuals who reported who discontinued a business rose to 3.2% — the highest level recorded to date.

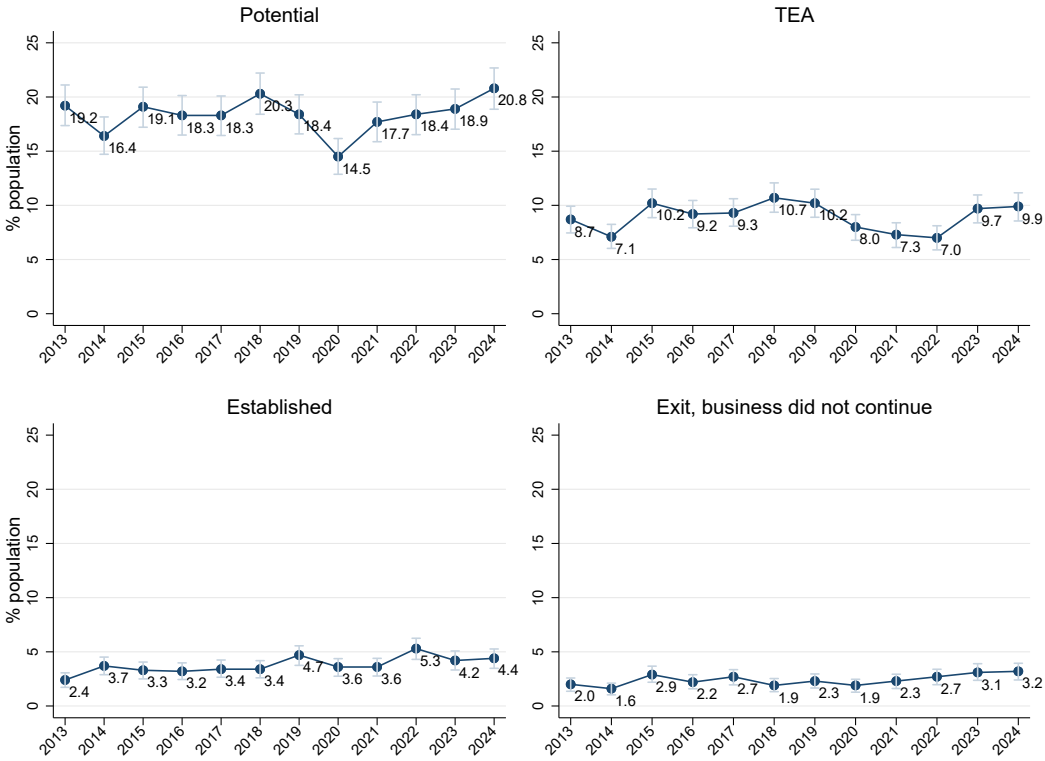
This evolution is consistent with observations on business and labour market conditions in Luxembourg at the time of data collection. These were marked by a slowdown in job creation and a rise in unemployment (STATEC, 2024a).[3] Moreover, in the first half of 2025, the number of bankruptcies rose by 7% compared to the same period in 2024 (593 versus 554 cases) (STATEC, 2025d).

Overall, despite a challenging economic environment, **the evolution in entrepreneurial activity in 2024 confirms earlier signs of recovery: the share of early-stage entrepreneurs rebounded towards historical levels, and entrepreneurial intentions also continued to increase.** The increasing shares of potential and TEA entrepreneurs, together with higher exits, migth indicate an increase in business dynamism.

These trends are consistent with those in other OECD and GEM countries (Berger et al., 2025; GEM, 2024). This is a positive sign, especially in light of concerns that major economic shocks could lead to permanent damages to entrepreneurship, creating so-called "missing generations of firms" — businesses that never emerge due to unfavourable economic conditions (Sedlacek and Sterk, 2020).

[3]The construction, professional services, and finance sectors were particularly affected. The construction sector alone lost more than 3 300 jobs since October 2022.

Figure 3.1: Entrepreneurship in Luxembourg (2013 – 2024).



Population shares (in %).
Source: 2013 – 2024 GEM Luxembourg APS data.

3.2 The entrepreneurial environment: respondents' networks, attitudes and perceptions

According to the GEM framework depicted in Figure 2.1, **individual attributes — such as psychological traits, perceptions, and socio-demographics characteristics — interact with the social, economic, and institutional context to form countries' "entrepreneurial ecosystems"**. This section provides insights on **the entrepreneurial environment in Luxembourg**, or Luxembourg's ecosystem, based on answers to the following question and statements: [4]

1. **Personally Know Entrepreneurs:** How many people do you know who have started a business in the past two years?
2. **Good Opportunities:** In the next six months, there will be good opportunities to start a business in Luxembourg.
3. **Easy to Start a Business:** It is easy to start a business in Luxembourg.
4. **Personally Have the Skills:** You have the knowledge, skills, and experience required to start a new business.
5. **Fear of Failure:** You would not start a business for fear it might fail.

The questions above intend to capture variables that are known to affect individuals' decisions to engage in entrepreneurship. Indeed, the decision to become an entrepreneur depends on the interplay between personality traits, attitudes, and perceptions of the surrounding environment (Boyd and Vozikis, 1994). Perceived favourable economic conditions and business opportunities shapes entrepreneurial intentions (Linan, 2008) and the decision to launch a business (Shane, 2003). Conversely, a negative perception of the economic environment can discourage entrepreneurial intentions and constrain business creation (Koellinger and Roy Thurik, 2012). Perceived ease of starting a business reflects features of the business environment, including regulation, access to resources, and market conditions. These are key indicators of how the socio-economic context can shape entrepreneurial activity (Djankov et al., 2002; World Bank, 2024b; OECD, 2025). Turning the intentions of pursuing entrepreneurial activities into practice, however, also requires confidence in one's abilities, as well as overcoming fears about the possible failure of

[4]Note that data collection and treatment have undergone a methodological change in 2019. Before that date, survey responses for Good Opportunities, Personally Have the Skills, Fear of Failure, and Ease of Starting a Business were gathered using a binary yes/no question. Since 2019, answers are provided on a 5-point Likert scale, from "strongly disagree" to "strongly agree". The shares reported in the charts are shares of respondents that indicate to "agree" or "strongly agree" with the statements. Another change has involved the questions on networks, where from a binary answer required prior to 2019, respondents are now asked to indicate the number of entrepreneurs they know. What is more, the fear of failure question was initially administered to the entire population. From 2015 onward, the question is administered only to those that agree or strongly agree to the statement on business opportunities. This might results in some discrepancies with data reported in previous reports.

the new venture. Research has shown that individuals' belief in their entrepreneurial capabilities strongly predicts their involvement in starting a business (Shinnar et al., 2014). Fear of failure, linked to individuals' attitudes towards risk, is often regarded as a barrier to entrepreneurship. It can be related to concerns of being involved expensive insolvency procedures, and social stigma (Cacciotti and Hayton, 2015). Finally, social networks are often essential in providing resources, knowledge, and support to new entrepreneurs (Greve and Salaff, 2003).

Figure 3.2 illustrates the evolution of the five indicators compiled from the five questions listed above. As already observed in previous reports, individuals' perceptions of the business environment display larger fluctuations — plausibly reflecting changes in the overall economic outlook — than personality traits, that are typically more stable over time.

In 2024, 46% of respondents declared to **know at least one new entrepreneur**. The proportion of respondents knowing at least one entrepreneur remained stable at around 36% on and before 2018, then jumped to 46% in 2019. (The jump recorded in 2019 should be interpreted cautiously, due to a methodological change in the survey.) After a decrease during the pandemic, in 2024, the indicator reached 47.6%, the highest value recorded in the observed period. These figures suggest a sustained presence of entrepreneurs within respondents' social networks.

Data show that respondents generally hold a favourable view of Luxembourg as a place to start a business. The two indicators at hand, however, show signs of deterioration in recent years. This pattern is possibly linked to growing economic uncertainty in the face of geopolitical tensions. (This is also generally consistent with the observed patterns in business confidence among non-financial companies evidenced by STATEC's *Note de Conjoncture*, STATEC, 2025a, p. 21.) In 2024, 47.7% of respondents declared that **there will be good opportunities to start a business in Luxembourg in the next six months**. In 2019, a majority of respondents declared to perceive good opportunities for starting a business (58%). However, in 2020 a notable drop (42%) occurred, in correspondence of the pandemic's outbreak. One observes a sharp rebound to 54% in 2021, followed by a continuing declining trend. The **ease of starting a business in Luxembourg** has followed an upward trajectory, increasing from 52% in 2015 to a peak of 65% in 2021–2022. However, a slight decline has been observed in recent years. In 2024, 61.0% of respondents reported that it is easy to start a business in Luxembourg, up marginally from 60.4% the previous year.

Confidence in **having the necessary skills, knowledge and experience to start a business** has shown a mild decline over the past four years, from 52.9% in 2021 to 48.8% in 2024.

Notably, **fear of failure, which has shown a rising trend since the pandemic onset, declined to 41.4% in 2024**, the lowest level on record. Specifically, fear of failure *among those stating that there are good opportunities to start a business,* has been generally stable over the years. This indicator has shown a slight upward trend in recent years, rising from 42% in 2020 to 47% in 2023. However, **in 2024, the fear of failure declined to its lowest recorded level of 41.4%**. Fear of failure is one of GEM's flagship indicators and is frequently used in international analyses of entrepreneurial ecosystems (OECD, 2025). This recent drop therefore warrants further scrutiny. A possible explanation for the low level recorded in 2024 may be the recent reform of the right of establishment approved by Parliament on 20 July 2024. The reform introduced the "new chance" scheme ("*nouvelle chance*"). Under certain conditions, the scheme allows individuals to obtain a new business permit even after previous bankruptcy or compulsory liquidation.[5] It is difficult, however, to attribute changes in perceived fear of failure to specific policy reforms. Newly introduced measures may require time before their effects are fully reflected in public perceptions. Moreover, variability in survey estimates should be considered.[6]

3.2.1 Socio-demographic characteristics of respondents

What follows examines the indicators of the previous section — **entrepreneurial networks, fear of failure, and perceptions of the business environment — for different population groups**. The groups are identified by socio-demographic characteristics of respondents, namely gender, age, immigration background and education.

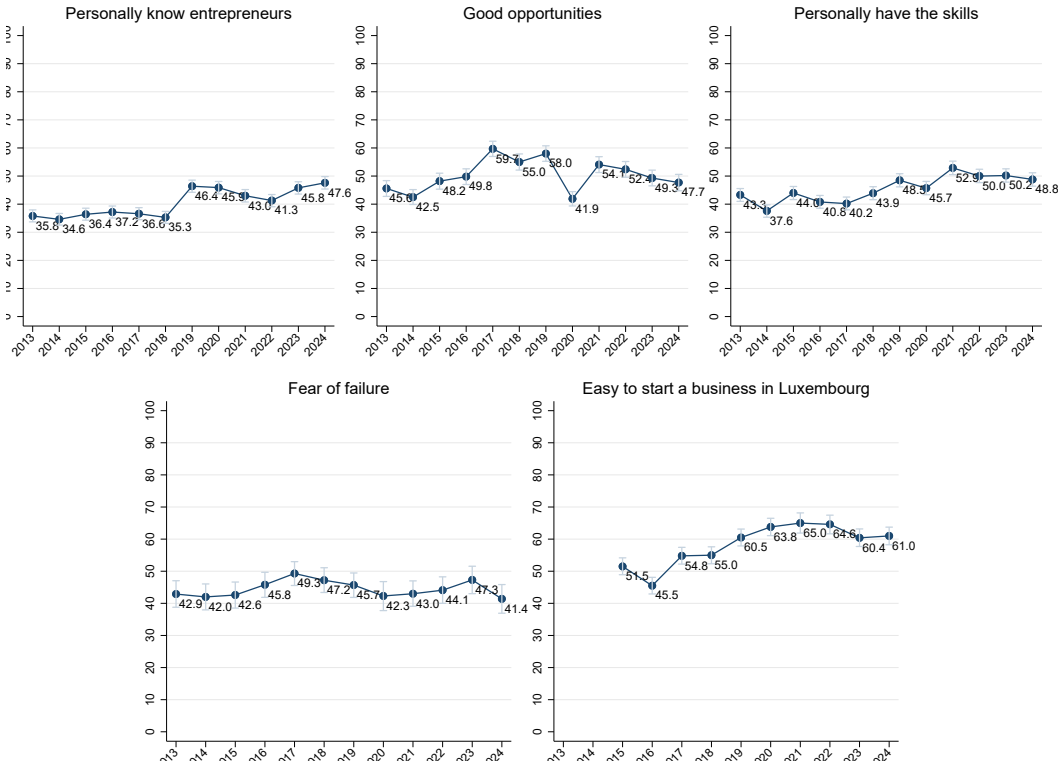
The charts report the values of the indicators for the population subgroups. The values are read as follows. Taking, for example, "know entrepreneurs by gender" in 2013 (top left panel), the figures indicate that 41 % of male respondents knew at least one entrepreneur. In contrast, only 31 % of female respondents knew at least one entrepreneur.

As observed in last year's report (GEM Luxembourg, 2024), data reveal the generalised **existence of gaps in traits and perceptions across the population groups** in Luxembourg. For example, it appears that higher shares of **immigrants express consistently more positive views of the business opportunities, and of the easiness of starting a business in Luxembourg**, compared to natives. Higher shares of men and immigrants, individuals with higher education and of younger age tend to

[5] Further details are available at `https://www.cc.lu/en/all-information/news/detail/reform-of-the-right-of-establishment-what-you-need-to-know`.

[6] A t-test on the difference in fear of failure between 2023 (47.3%) and 2024 (41.4%) yields an estimated change of –5.9 percentage points, with a 90% confidence interval ranging from –12.5 to +0.7 percentage points. This difference is not statistically significant at conventional level ($\alpha = 10\%$).

Figure 3.2: The Luxembourg environment (2013 – 2024): networks, attitudes and perceptions.

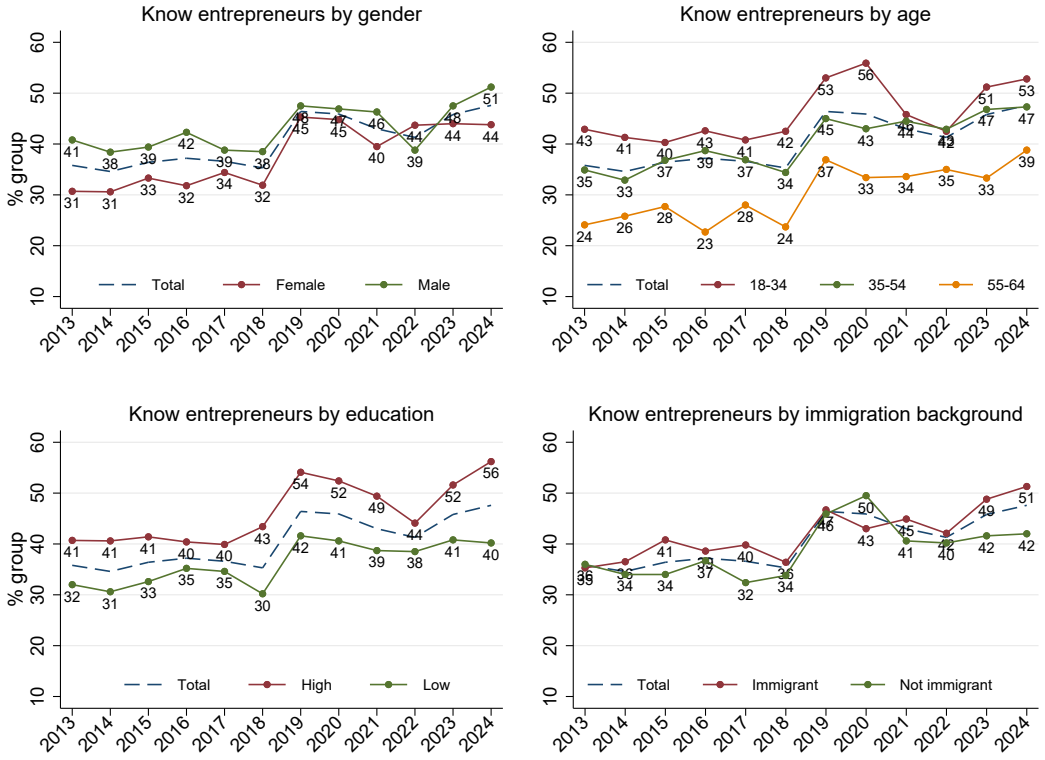


Population shares (in %). Break in the series in 2019. Easy to start a business introduced in 2015.
Source: 2013-2024 GEM Luxembourg APS data.

express confidence in their entrepreneurial skills compared to the other categories. There is an **apparent gender and age gap in fear of failure**.

Figure 3.3 shows that individuals that are younger and more educated report higher proportions of "personally knowing entrepreneurs" compared to older age groups and individuals with lower education levels. These "gaps" appear stable over time. This suggests that entrepreneurial social networks may vary significantly by age and education. In general, the data do not show major differences by immigration background or gender, especially following the methodological revisions introduced in 2019. However, in more recent years (2023 and 2024), a gap has emerged. For example, in 2024, 51% of respondents with an immigration background reported personally knowing an entrepreneur compared to 42% among non-immigrants.

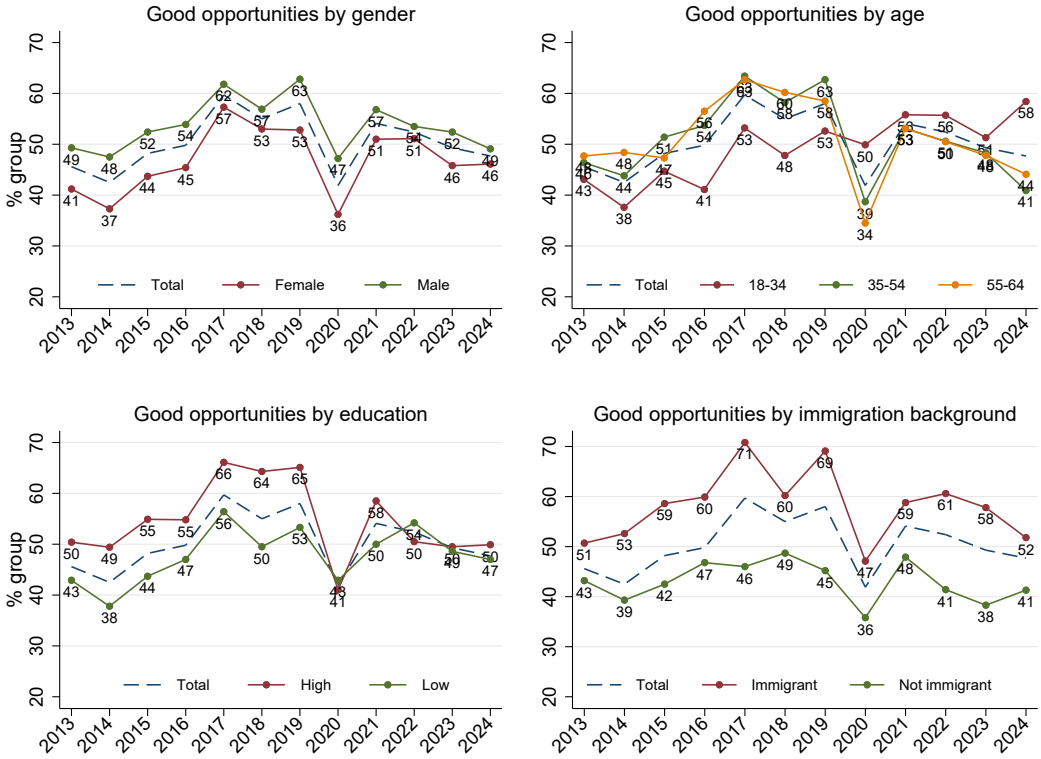
Figure 3.3: Personally know entrepreneurs by socio-demographic groups.



Shares of population groups (in %). High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.Break in the series in 2019.
Source: 2013-2024 GEM Luxembourg APS data.

Figure 3.4 illustrates the different perceptions of entrepreneurial opportunities by socio-demographic group. Immigrants and male respondents have consistently reported more optimistic views of business opportunities over the years. Highly educated individuals were more optimistic before the pandemic. However, following the COVID-19 outbreak, views across groups have become aligned. One can also see that the significant drop in "optimism" recorded in 2020 affected all demographic groups, with the possible exception of individuals of 18-34 years of age. In 2024, the youngest individuals reported the highest levels of optimism, with 58% expressing a positive outlook. This compares to 44% among those aged 55–64 and 41% among those aged 35–54.

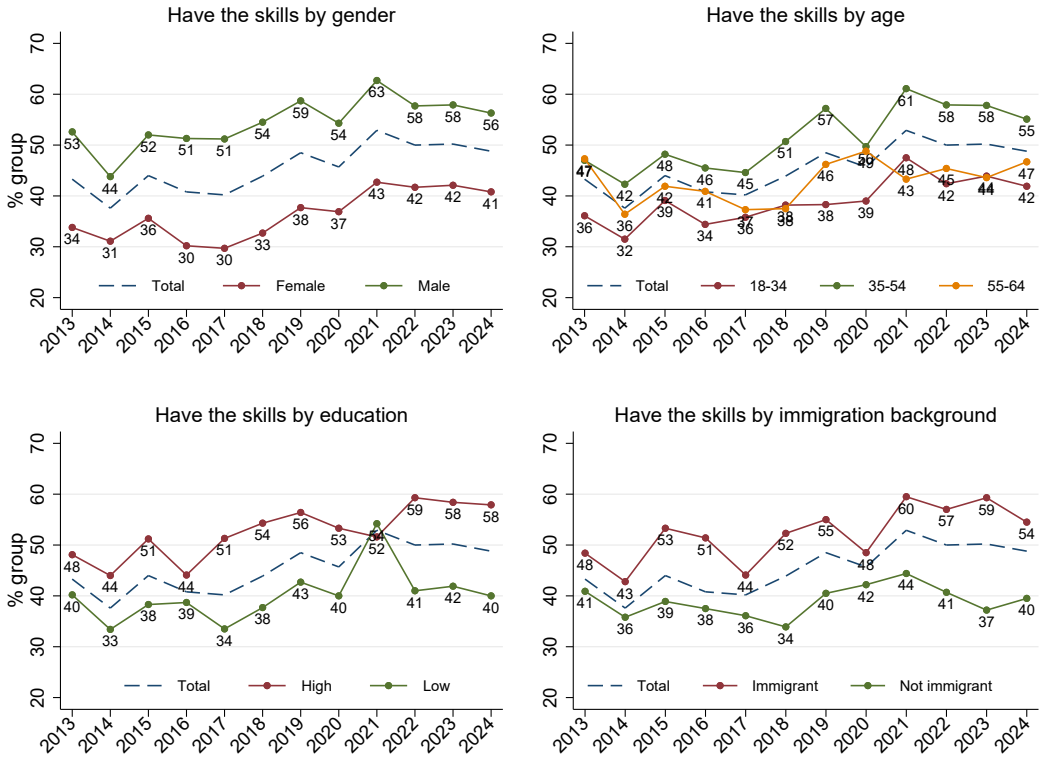
Figure 3.4: See good opportunities in the next six months by socio-demographic groups.



Shares of population groups (in %). High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.Break in the series in 2019.
Source: 2013-2024 GEM Luxembourg APS data.

Figure 3.5 shows that men, immigrants, and highly educated individuals tend to report higher self-perceived entrepreneurial skills than women, natives and individual with lower education levels. In 2024, 56% of men expressed confidence in their entrepreneurial skills compared to 41% of women. In the same year, middle-aged individuals (35–54) reported the highest level of self-confidence, with 55% believing they have the skills to start a business. This is higher than the 47% observed among the oldest age group (55–64) and the 42% recorded among the youngest group (18–34). 58% of those with higher education levels reported confidence in their skills, in contrast to 40% for those with lower education levels. Immigrants exhibit higher confidence in their skills (54%) compared to non-immigrants (40%). These gaps tend to remain relatively stable over time.

Figure 3.5: Personally have the skills by socio-demographic groups.

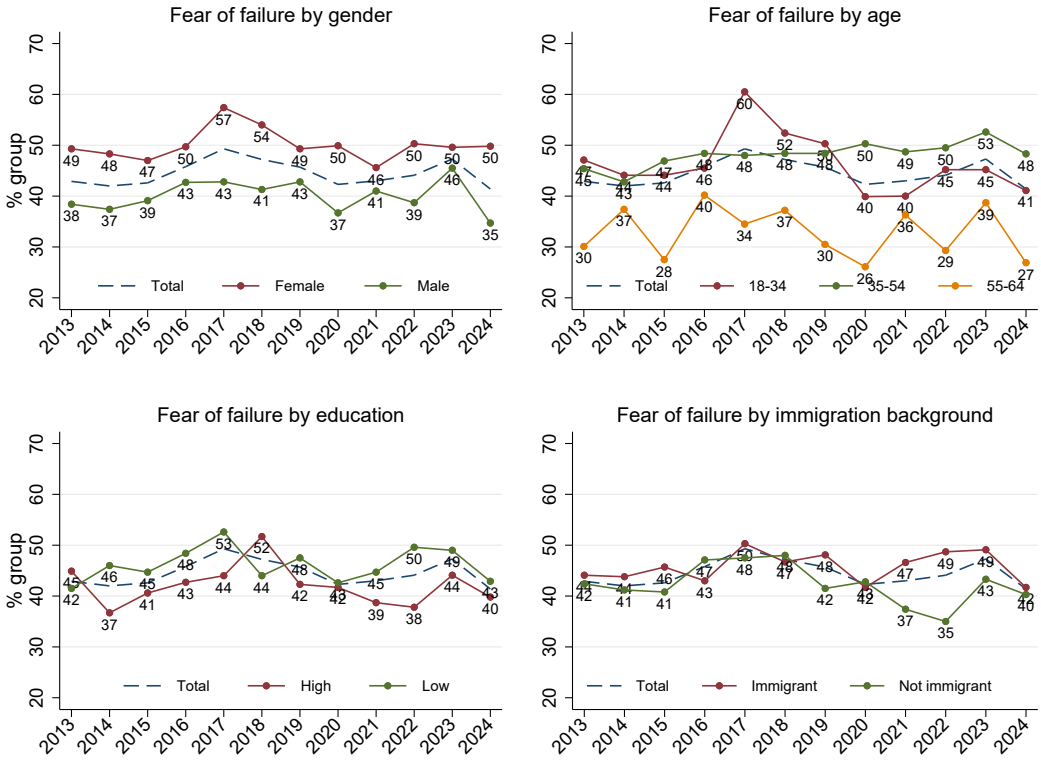


Shares of population groups (in %). High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.Break in the series in 2019.
Source: 2013-2024 GEM Luxembourg APS data.

Figure 3.6 shows a systematic gender and age gap in fear of failure among those who believe there are good opportunities. Women have consistently reported higher levels of fear of failure than men throughout the period. The most recent data suggest a widening in this gap. In 2024, fear of failure remained stable at around 50% for women, compared to 35% for men. **The decline in fear of failure observed in 2024 was largely driven by men**. Older individuals (aged 55–64) typically report

lower fear of failure than other age groups. No clear differences in fear of failure are noticeable for education levels or immigration background.

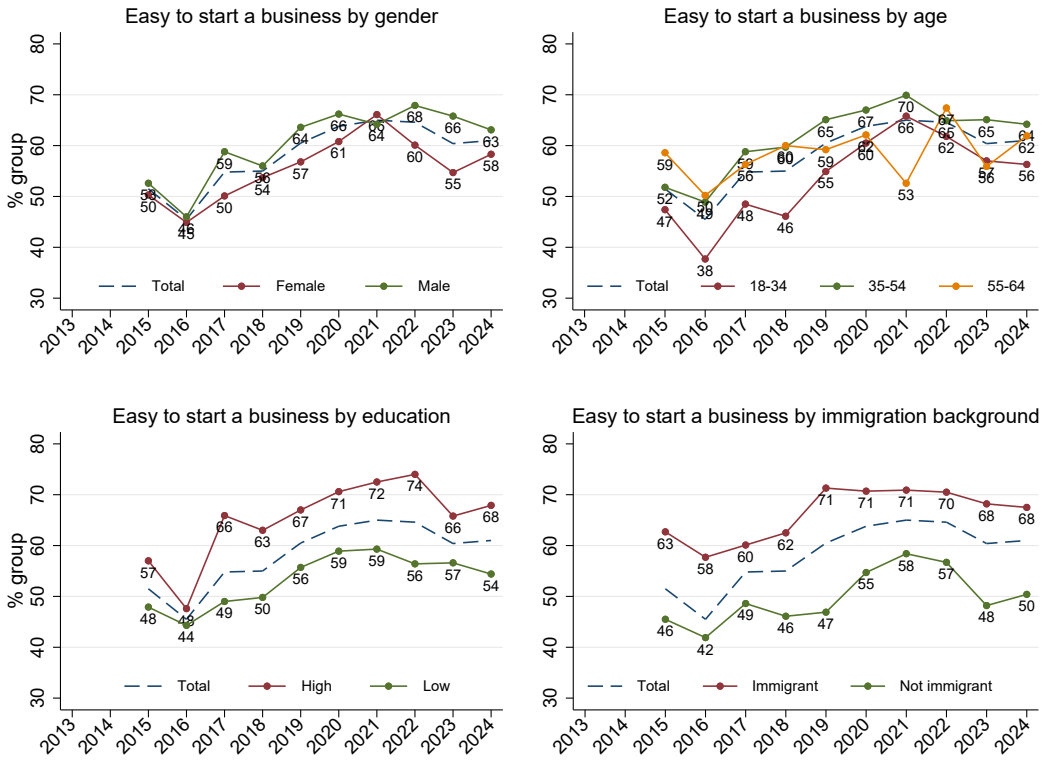
Figure 3.6: Fear of failure by socio-demographic groups.



Shares of population groups (in %). High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.Break in the series in 2019.
Source: 2013-2024 GEM Luxembourg APS data.

Figure 3.7 illustrates respondents' perceptions on the ease of starting a business in Luxembourg across the socio-demographic groups. Immigrants and highly educated individuals have consistently perceived greater easiness of starting a business in the country throughout the period. The data also point to a gender gap in perceived ease of starting a business in recent years. However, this gap appears to have narrowed in 2024. (63% of men believed it was easy to start a business, compared to 58% of women). Middle-aged respondents have also reported greater easiness to start a business than those in the younger age group throughout.

Figure 3.7: Easy to start a business in Luxembourg by socio-demographic groups.



Shares of population groups (in %). Variable introduced in 2015; break in the series in 2019. High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.
Source: 2013-2024 GEM Luxembourg APS data.

3.3 The profiles of potential and early-stage entrepreneurs

This section provides information on the **entrepreneurial intentions and engagement of different population subgroups**. The groups are identified according to selected socio-demographic characteristics: gender, education, immigration status, and age. We focus on entrepreneurial intentions and early-stage entrepreneurship.[7]

This analysis reveals that **entrepreneurship gaps exist across all the socio-demographic dimensions considered**, shows the **persistent entrepreneurship gender gap in Luxembourg, and confirms immigrants' higher propensity to engage in entrepreneurship**. Gaps tend to be persistent over time, while trends do not seem to depart from those observed for the population.

The scientific literature highlights factors that may explain the observed gaps. These factors include prevailing cultural norms (Hechavarria and Reynolds, 2009), and "self-efficacy", which refers to an individual's belief in their ability to perform the necessary behaviours (Wilson et al., 2007). The latter is a possible explanation for the gender entrepreneurship gap. Indeed, figure 3.5 in the previous section illustrates that women consistently perceive themselves as having fewer entrepreneurial skills than men, which provides support to the self-efficacy view. In 2024, 41% of women reported having the knowledge, skills, and experience required to start a new business, compared to 56% of men.

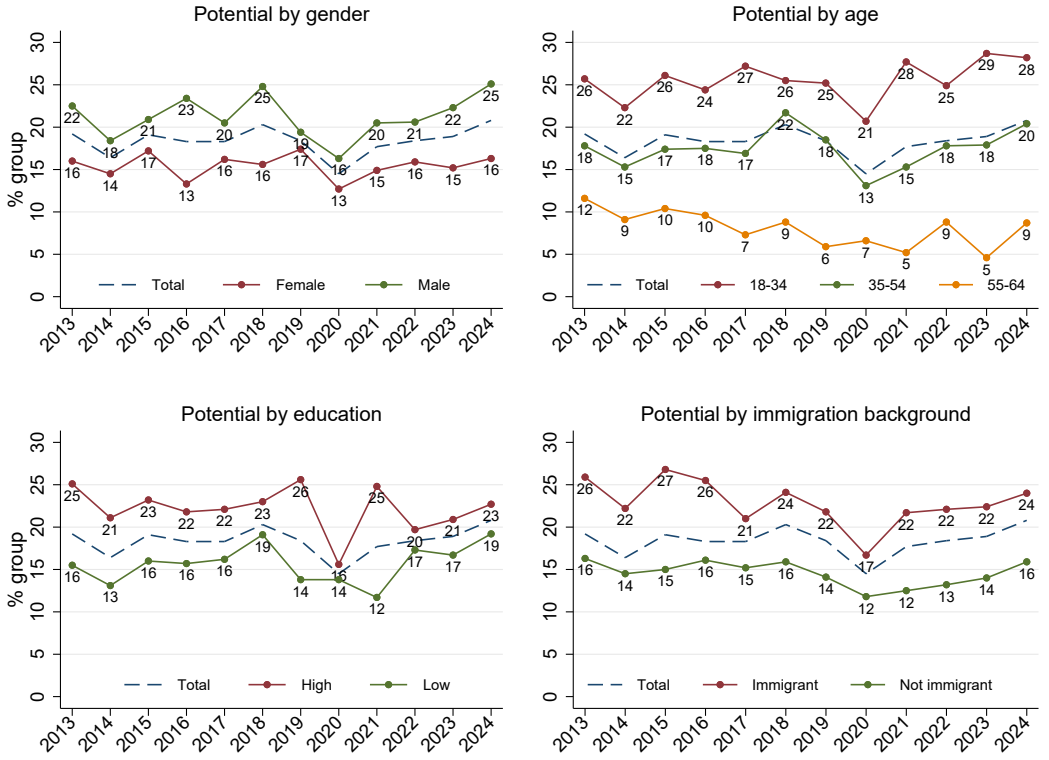
The gender gap in entrepreneurship has been observed in nearly all GEM countries (Elam et al., 2021; GEM (Global Entrepreneurship Monitor), 2023) and is supported by evidence from alternative indicators such as self-employment and sole proprietorship (Halabisky, 2018; OECD and European Union, 2018). While recent studies suggest that this gap is gradually narrowing in many GEM countries (GEM (Global Entrepreneurship Monitor), 2023), the latest OECD report (OECD, 2023) confirms that, in Luxembourg, men remain significantly more likely than women to be self-employed.

Figure 3.8 shows that **entrepreneurial intentions vary considerably across the groups**. Specifically, men, young adults (18-34), those with higher education, and immigrants are more likely to declare that they intend to start a business in the next three years than their counterparts. In 2024, 25% of all male respondents declared their intentions to start a new business, in contrast to 16% of female respondents. In the same year, respectively 24% of immigrants, and 23% of highly

[7] Due to sample size issues we do not report breakdowns for established entrepreneurs (EBO) and business exits.

educated individuals reported intentions to start a business compared to 16% of non-immigrants, and 19% of those with lower education levels. Furthermore, 28% of younger individuals intended to start a business compared to 20% of middle-aged (35-54) and 9% of older individuals (55-64). The observed gaps are persistent over time, with the possible exception of the year 2020. Indeed, the COVID-19 crisis seems to have affected more those groups that are more likely to report entrepreneurial intentions, resulting in the narrowing of certain gaps for that year.

Figure 3.8: Potential entrepreneurs: gender, age, education and immigration (2013 – 2024).



Shares of population groups (in %). High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.
Source: 2013-2024 GEM Luxembourg APS data.

Figure 3.9 presents results for **early-stage entrepreneurship (TEA)**. It shows the evolution of TEA by gender (top left panel), age (top right), education (bottom left) and immigration background, and compares it to the aggregate TEA (dashed line). The share of male respondents engaged in TEA has consistently been higher than that of female respondents across all observed years. While trends between the two groups are broadly similar,[8] there are some notable differences. First, female TEA declined in 2016 and 2017. Second, during the pandemic, TEA decreased for both groups but followed different patterns. In 2023, the gender gap appeared to be

[8]The TEA rates for men and women are positively correlated, with a Pearson correlation coefficient of 0.45.

narrowing. However, in 2024, it widened significantly.[9] **The proportion of women engaged in TEA fell from 8.7% to 6.4%, while the rate for men rose from 10.6% to 13.2%.** This is the highest rate of male TEA observed in the series.

TEA also differs across age groups. Throughout the observed period, TEA has been most pronounced among younger respondents, a trend that continued in 2024. That year, however, the TEA rate for respondents aged 55–64 increased significantly, rising from 4.3% in 2023 to 7.1%. Among those aged 35–54, TEA rose more moderately, from 9.3% to 10.7%. In contrast, for individuals aged 18–34, the TEA rate declined sharply, dropping from 18.0% in 2023 to 10.3% in 2024.

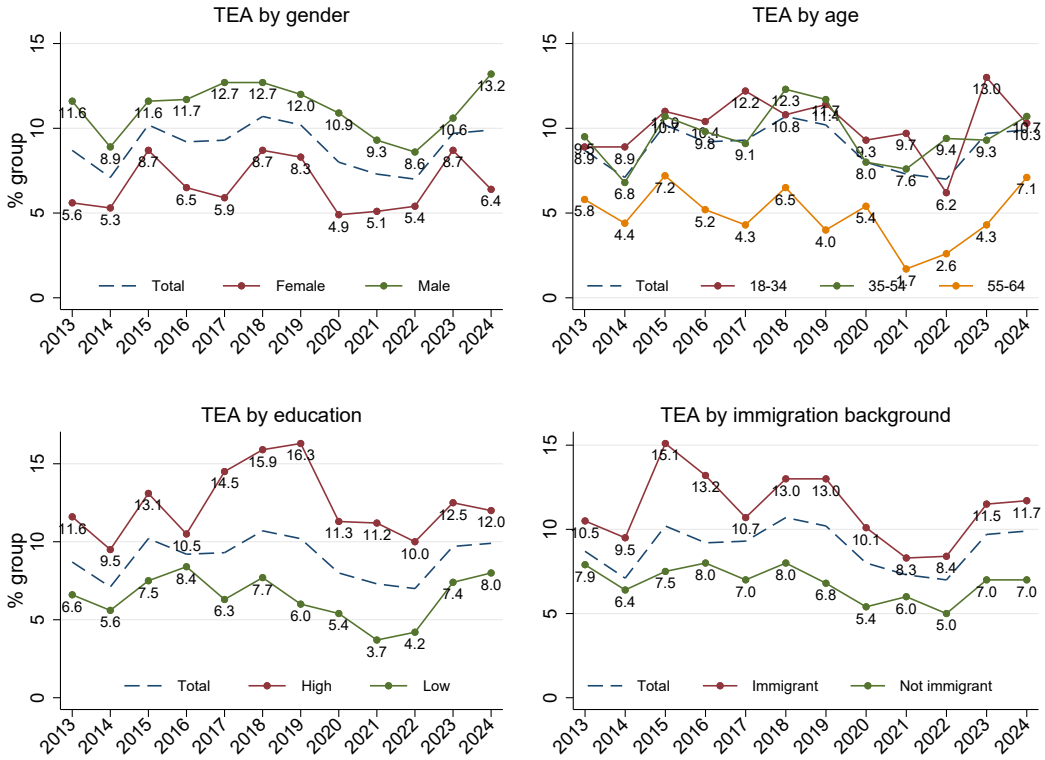
The bottom left panel in Figure 3.9 depicts TEA by education level. Throughout the period, the TEA rate has been consistently higher for individuals with higher education levels. This is in line with previous research that highlights the positive impact of education on the decision to start a business (Block et al., 2013). In 2024, TEA decreased only marginally among individuals with higher education, falling from 12.5% to 12.0%. In contrast, for those with lower education levels, TEA increased from 7.4% in 2023 to 8.0% in 2024, indicating a notable rise in entrepreneurial activity within this group.

The bottom right panel in the Figure shows that TEA is higher for immigrants than natives. The last data point, 2024, recorded a TEA rate for immigrants of 11.7%, compared to 7% for natives. This result highlights the contribution of immigrants to Luxembourg's entrepreneurship, and is in line with research on immigrants' entrepreneurs. [10]

[9] More precisely, the gender gap in TEA increased from 1.9 percentage points in 2023 to 6.8 percentage points in 2024. This increase is statistically significant at the 10% level, with a 90% confidence interval ranging from 0.7 to 9.0 percentage points.

[10] Previous studies highlighted immigrants' higher propensity for entrepreneurship in Luxembourg, but also the lower success rates that immigrants exhibit in the subsequent stages of entrepreneurship (Peroni et al., 2016).

Figure 3.9: TEA: gender, age, education and immigration (2013 – 2024).



Shares of population groups (in %). High education is defined as obtaining at least a tertiary education degree (Master craftman's diploma is not included); immigrants are those residents who were not born in Luxembourg; age groups are defined as 18-34 year-olds, 35-54, and 55-64. Dashed lines refer to the whole sample.
Source: 2013-2024 GEM Luxembourg APS data.

3.4 Entrepreneurial motivations

GEM data provide information on the **motivations that drive people to become entrepreneurs.** Motivations are generally thought as providing indications on qualitative aspects of entrepreneurship: entrepreneurship studies place emphasis on the distinction between opportunity-driven and necessity-driven entrepreneurship. **Opportunity-driven entrepreneurs** are those individuals engaging in entrepreneurial activities because they see a business opportunity. **Necessity-driven entrepreneurs** are individuals who establish new ventures due to a lack of paid employment opportunities. These types of entrepreneurship typically display different patterns along the business cycle (Thurik, 2014), with necessity and opportunity entrepreneurship showing, respectively, anti-cyclical and pro-cyclical patterns. Economic downturns are usually characterised by an increase in necessity-driven entrepreneurs. In contrast, opportunity-driven entrepreneurship numbers are higher during period of growth (Fairlie and Fossen, 2019). What's more, the literature shows that opportunity-driven entrepreneurs create firms that tend to have higher growth prospects and create more jobs than necessity-driven entrepreneurs (Fairlie and Fossen, 2019; Schoar, 2010). For this reason, necessity-driven entrepreneurship is seen as less desirable than opportunity-driven entrepreneurship.

Since the programme's inception, the GEM has attempted to capture the distinction between the two types of entrepreneurship , and to explore the reasons that drive individuals to become entrepreneurs. In 2019, GEM has expanded the questionnaire by asking TEA entrepreneurs to evaluate their motivations by selecting one or more of the following statements:[11]

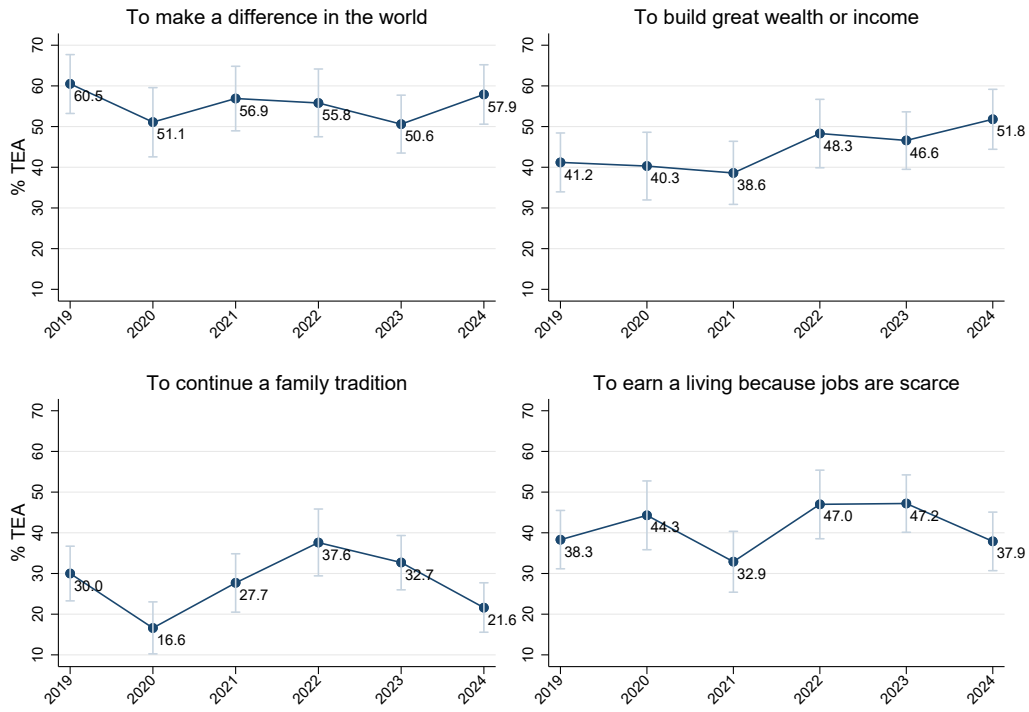
- To make a difference in the world;
- To build great wealth or very high income;
- To continue a family tradition;
- To earn a living because jobs are scarce.

Note that the last statement correspond to the prevailing definition of necessity-driven entrepreneurship found in the literature. As for *opportunity-driven entrepreneurs, since 2019 GEM Luxembourg has been capturing it by the share of TEA entrepreneurs who are motivated by a desire to make a difference in the world.*

[11] In the period from 2013 to 2019, the Global GEM defined 'opportunity TEA' as the share of TEA entrepreneurs who were pulled towards entrepreneurship by business opportunities, and driven by a desire for autonomy and independence or to increase their income. Autonomy and independence were subsequently excluded as reasons because tests revealed them being common among early-stage entrepreneurs (Niels and Kelley, 2019).

Figure 3.10 shows how entrepreneurial motivations have evolved in Luxembourg from 2019 to 2024. **In 2024, we observe a marked significant rise in opportunity-driven and, at the same time, a decline in necessity-driven entrepreneurship**. This might indicate a reversal of the trend observed in recent years, which exhibits a decrease in opportunity-driven entrepreneurship , and an increase in necessity-driven ventures. Specifically, in 2024, the share of TEA entrepreneurs motivated by the desire to "make a difference in the world" increased by nearly 7 percentage points compared to 2023. At the same time, the proportion of those driven by the lack of better alternatives declined from 47.2% in 2023 to 37.9% in 2024. It is plausible that economic conditions, and the post-pandemic recovery, may be affecting both the quality and intensity of entrepreneurial activity.[12]

Figure 3.10: Entrepreneurial Motivations (2019 – 2024).



Shares of TEA entrepreneurs (in %). Source: 2019 – 2024 GEM Luxembourg APS data.

[12]These trends also support the empirical distinction between opportunity- and necessity-driven entrepreneurship used in GEM Luxembourg.

4

Entrepreneurship in Luxembourg: a comparative perspective

This chapter presents a comparative analysis of entrepreneurship in Luxembourg and several European countries. The analysis uses global GEM data on 20 European countries participating in both the 2023 and 2024 waves of the APS. This cross-country comparison provides additional insights into the analysis of Luxembourg's entrepreneurial intensity and ecosystem presented in the previous chapter.

Each year, the Global Entrepreneurship Monitor (GEM) collects data and documents entrepreneurship across countries worldwide, countries that feature different economic structures and levels of economic development. To ensure comparability, GEM classifies countries according to their income levels (low, medium, and high), and presents the analysis of entrepreneurship by group. In the same spirit, this chapter compares Luxembourg with other European countries that share similar economic structures, and for which observations are available for the years 2023 and 2024.

We find that, **compared to other European countries, Luxembourg ranked above average in terms of entrepreneurial intentions and early-stage entrepreneurship in 2024**. The country's potential entrepreneurs and TEA rates were at, respectively, 21 and 9.9%, higher than cross-country averages (at 17 and 9.4%). However, Luxembourg featured one of the lowest rates of Established Business Ownership (EBO) within GEM's Europe, and a higher than average proportion of exits involving discontinued businesses.

The indicators, which feature considerable variations across-country, confirm the recovery in early-stage entrepreneurial intensity already observed in previous reports. More specifically, compared to 2023, the share of potential and early-stage entrepreneurs respectively increased and remained stable in most European countries. At the same time, the number of business exits rose and the share of established entrepreneurs declined.

As noted in previous reports (GEM Luxembourg, 2024), the perceptions of the business environment vary widely across countries, while individual traits of respondents show less variation. In Luxembourg, the share of respondents who reported having entrepreneurial skills and knowing someone who started a business was slightly below the cross-country average, though differences were not large. The perceptions of business opportunities in the country were broadly in line with those in other European countries. About half of Luxembourg residents believed there were good opportunities to start a business in the country. What is more, 61% of respondents agreed that it is easy to start a business in Luxembourg. This compares to an average 50% across Europe. Fear of failure was one of the lowest in Europe. Luxembourg also recorded the largest drop in fear of failure, falling from 47% in 2023 to 41% in 2024, below the European average of 47%.

On entrepreneurship quality, Luxembourg had a considerable lower-than-average necessity-driven entrepreneurship, and a higher-than-average share of highly motivated entrepreneurs. Luxembourg, a "strong innovator" according to the European Innovation Scoreboard (European Commission et al., 2023), ranked fourth in terms of the proportion of TEA entrepreneurs that declared to be innovative, loosing the first position documented in 2023.

More worryingly, Luxembourg reported the lowest level of growth expectations among entrepreneurs in 2024. Combined with the decline in the share of individuals perceiving good opportunities to start a business, revealed by time-series data, this may indicate weakening business confidence. This is also consistent with the general decline in business confidence among non-financial companies evidenced by STATEC's at the time of the data collection (STATEC, 2024a; STATEC, 2024b).

The chapter is organised as follows. Section 4.1 presents indicators of entrepreneurial intensity for the various stages of the entrepreneurial process. Section 4.2 reports on perceptions of the business environment and attitudes towards risk, providing a comparative evaluation of Luxembourg's entrepreneurial environment. The chapter concludes with Section 4.3, which provides information on TEA entrepreneurs' motivations for engaging in entrepreneurship, innovations in products and services, and growth expectations. These indicators provide information on the impact and quality of entrepreneurship. This is relevant because well-motivated and innovative entrepreneurs are generally perceived as drivers of productivity and economic growth (e.g., Erken et al., 2018; Lafuente et al., 2020).

4.1 Entrepreneurial activity in Europe

This section provides information on entrepreneurial intensity in Luxembourg in a comparative perspective. As in the previous chapter, we provide a set of indicators that allows us to gauge entrepreneurial intensity at all stages of the entrepreneurial process:

1. Potential entrepreneurs: individuals planning to start a new business within the next three years;
2. TEA entrepreneurs: individuals actively involved in setting up a business, and new entrepreneurs (owner-managers of firms younger than 42 months);
3. Established entrepreneurs (EBO): owner-managers of a firm that has been paying wages for over 42 months;
4. Discontinued entrepreneurs: owner-managers who have exited a discontinued business in the past 12 months.

The charts in the remainder of the section presents the indicators of entrepreneurship for the year 2024 (bars) for Luxembourg and the other 20 European countries. (For comparison, circles denote the record for the previous year, 2023.) The blue bars refer to group averages. Table 11 in the Annex reports the values of the indicators depicted in the charts.

One can see that the indicators feature wide cross-country variations. Compared to the previous year, in 2024 the average share of potential entrepreneurs increased, TEA remained stable, while the proportion of established businesses slightly decreased. Average business exits increased as well. Considered together, these data could suggest an increase in business dynamism.[1]

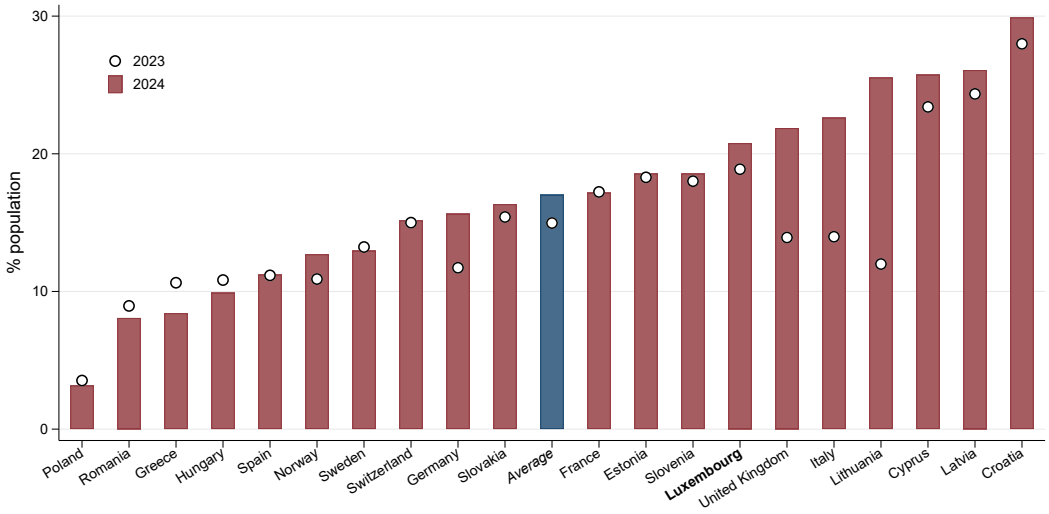
Compared to other European countries, Luxembourg ranks above average in terms of potential entrepreneurs and Total Early-stage Entrepreneurial Activity (TEA). In contrast, it features one of the lowest rates of Established Business Ownership (EBO) within GEM's Europe, and maintains a higher than average proportion of exits involving discontinued businesses.

[1] Business dynamism typically refers to simultaneous accelerations in the rates of business creation and business closures. This reflects economies ability to reallocate resources, adapt to change, and foster growth. Business dynamism is linked to productivity gains, innovation, and job creation (OECD, 2006).

Potential entrepreneurship

Figure 4.1 compares Luxembourg's entrepreneurial intentions against other countries. In 2024, the proportion of potential entrepreneurs in Luxembourg was 21%, above the cross-country average of 17%. Compared to the previous year, entrepreneurial intentions either slightly increased or remained unchanged in a majority of countries (sixteen out of twenty). The United Kingdom, Lithuania and Italy recorded considerable increases in potential entrepreneurship rates. Luxembourg is among the countries that saw a moderate increase in entrepreneurial intentions in 2024 compared to 2023.

Figure 4.1: Potential entrepreneurs in Europe.

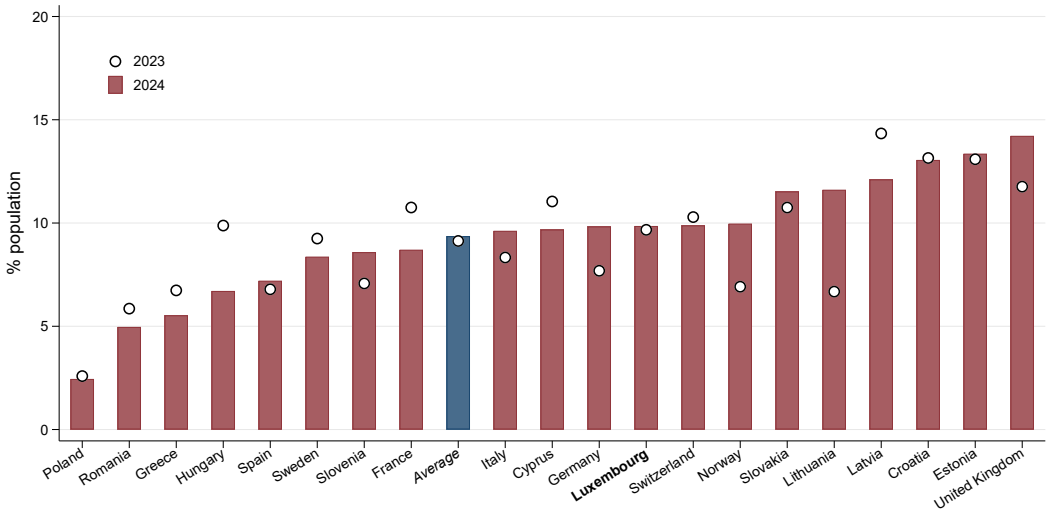


Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

Early Stage Entrepreneurial Activity (TEA)

Figure 4.2 presents cross-country TEA rates for the years 2024 and 2023. The average TEA has remained stable at 9.4% in 2024. In most countries, TEA rates have marginally decreased or remained stable. Six countries have experienced an increase, with only Lithuania and Norway experiencing a substantial increase in this indicator. As shown in Section 3.1, Luxembourg's TEA rate increased slightly compared to 2023, moving from 9.7% to 9.9%, continuing the recovery from its lowest record of 7% during the pandemic. TEA rates varied considerably across countries, ranging from 14% in the United Kingdom to 2% in Poland. The United Kingdom, Croatia, and Latvia continue to rank among the top performers. Luxembourg's TEA was slightly above the country average, placing it in the middle of the distribution.

Figure 4.2: Total Early-stage Entrepreneurial Activity (TEA) in Europe.

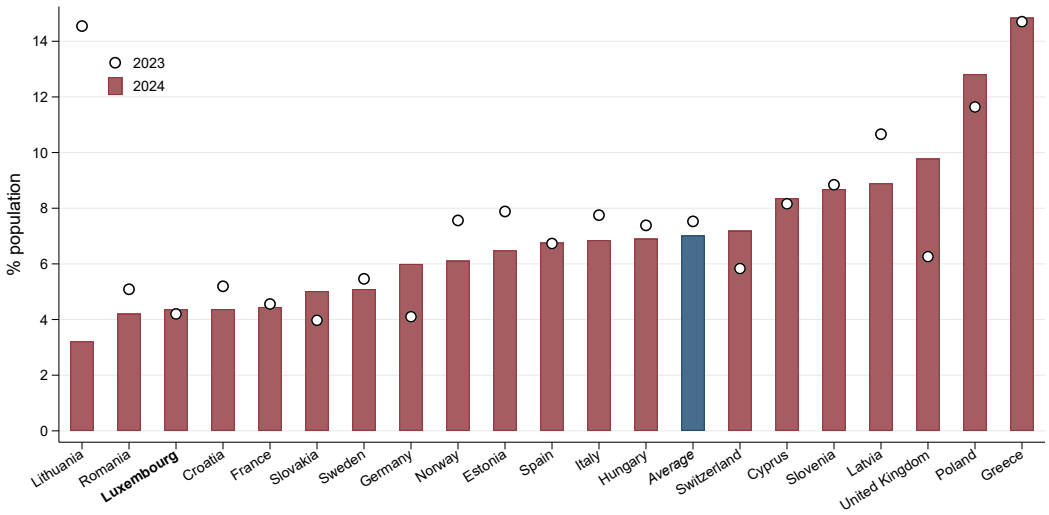


Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

Established Business

Figure 4.3 presents the level of Established Business Ownership (EBO) in 2024 and 2023. Compared to the previous year, in the majority of countries considered (15 out of 20), the share of adults owning or managing an established business declined or remained stable. Lithuania experienced the sharpest drop, falling from a top performer in 2023 (15%) to the lowest level in 2024 (3%). In contrast, only five countries reported an increase, most notably the UK and Germany. Greece and Poland remained as top performers in 2024. The cross-country average EBO remained broadly stable at 7%. Luxembourg had one of the lowest EBO rate, at 4%, stable compared to the previous record.

Figure 4.3: Established Business Ownership (EBO).

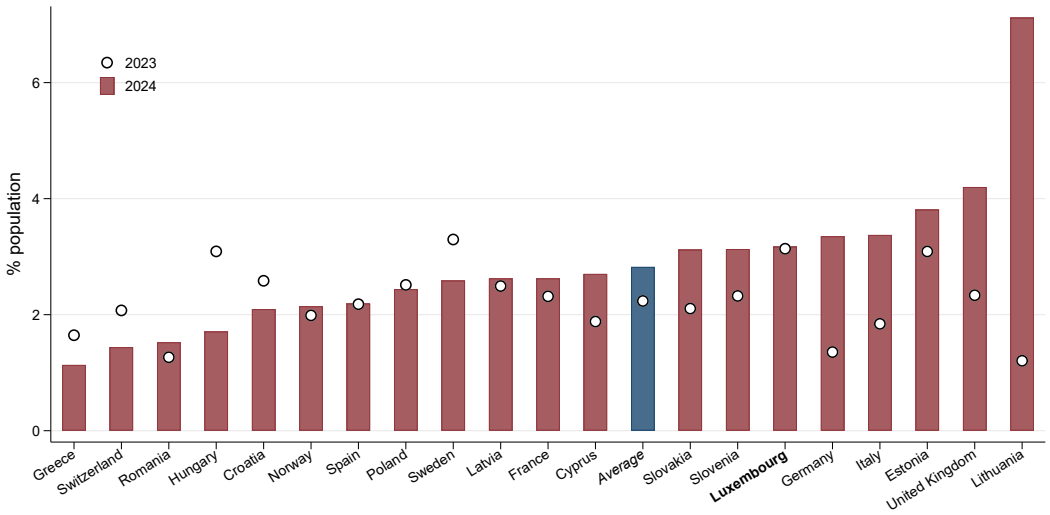


Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

Entrepreneurial exit

Figure 4.4 shows that in 2024, the number of people involved in discontinued businesses decreased in only five of the twenty surveyed countries compared to 2023. In the remaining thirteen, the rate either increased or remained stable. Notably, Lithuania recorded the most significant rise in business exits, mirroring the sharp drop in EBO reported above in Figure 4.3. As a result, the cross-country average for business discontinuation rose to 3% in 2024. In Luxembourg, the exit rate remained stable at around 3%, slightly above the countries' average.

Figure 4.4: Share of adults discontinuing a business in the last 12 months.



Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

4.2 The entrepreneurial environment: respondents' traits, perceptions, and networks

This section reports on respondents' traits, perceptions of the business environment, and entrepreneurial networks across Europe, as these variables are known to affect individuals' decisions to engage in entrepreneurship.

The indicators considered are the following:

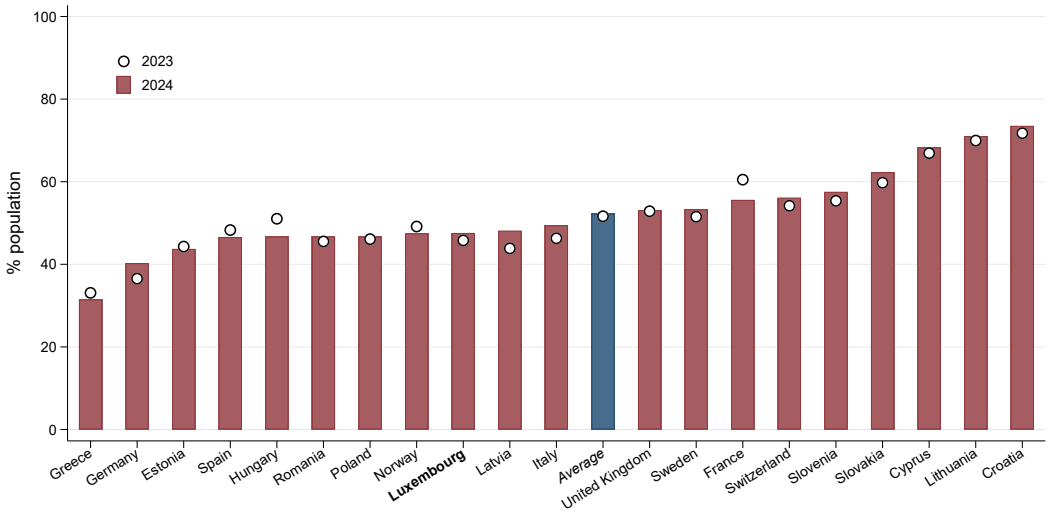
1. **Personally Know Entrepreneurs:** "Knowing someone who has started a business in the past two years."
2. **Good Opportunities:** "In the next six months, there will be good opportunities to start a business in my area."
3. **Personally Have the Skills:** "I possess the knowledge, skills, and experience required to start my own business."
4. **Fear of Failure:** "Hesitating to start a business due to fear of failure, among those who believe there are good opportunities locally."
5. **Easy to Start a Business:** "It is easy to start a business."

Overall, we observe that perceptions of the business environment, captured by "good opportunities" and "easiness to start a business", vary considerably across countries. In contrast, individuals' traits such as fear of failure and perception of own abilities, which reflect personality and behavioural traits, display less variation.

Figure 4.5 presents data on **entrepreneurial networks** across Europe for 2023 and 2024. Overall, this indicator remained stable in most countries, with France and Hungary recording a minimal decline. The cross-country average remained stable, indicating that 52% of respondents personally know an entrepreneur. In Luxembourg, the share of adults who reported knowing an entrepreneur remained slightly below the European average, with a slight increase from the previous year (from 46% to 48%).

Figure 4.6 illustrates the share of individuals who perceived **good business opportunities** across Europe. The indicator shows wide variation across countries, ranging from a low of 29% in Spain to a high of 74% in Poland. Overall, there was a slight decline in optimism, with the cross-country average falling from 49% in 2023 to 48% in 2024. Luxembourg mirrored this trend, with a decrease from 49% to 48%. Five countries recorded a modest increase in perceived business opportunities. This is consistent with the decline in business confidence of non-financial companies

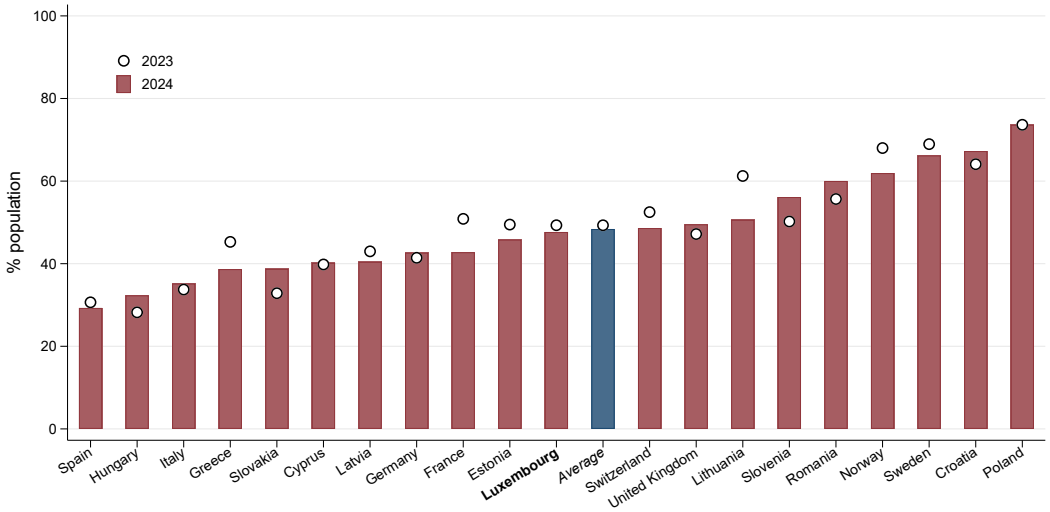
Figure 4.5: Personally know entrepreneurs.



Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

reported for the third quarter of 2024, at the time of the data collection (STATEC, 2024b).

Figure 4.6: Good opportunities to start a business in next 6 months.



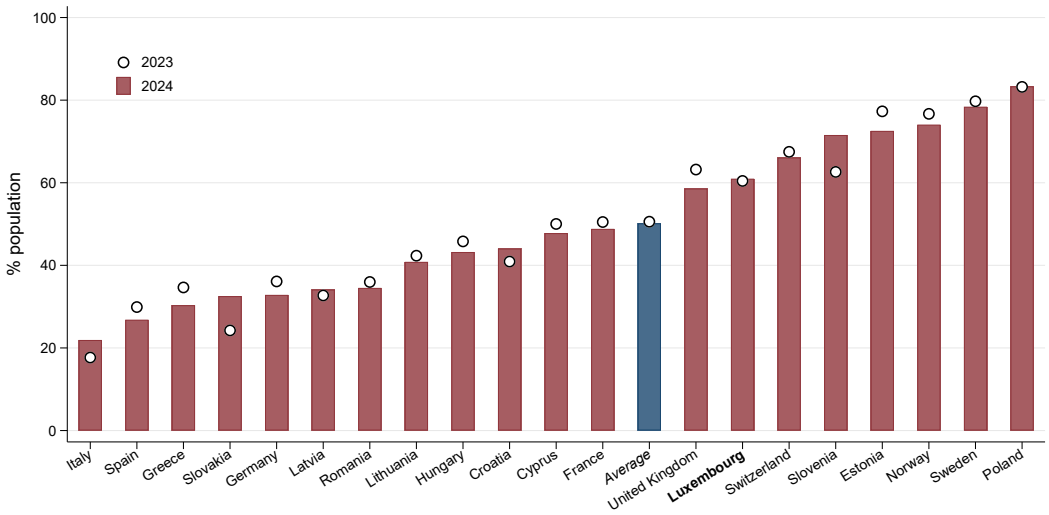
Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

Institutions, policy initiatives and legal and administrative frameworks form an essential part of a country's entrepreneurial ecosystems. Specifically, well-functioning institutions that facilitate the creation and operation of businesses play a key role in supporting entrepreneurship. [2]

[2]This concept is the theoretical basis of many international studies, including the OECD's Entrepreneurial Ecosystem Diagnostics (OECD, 2025) and the World Bank's forthcoming B-Ready index, which will assess regulatory quality and efficiency of Luxembourg in 2026 (World Bank, 2024b; World Bank, 2024a). See also Chapter 9 for a detailed summary of Luxembourg's ecosystem assessment.

GEM captures this dimension by asking respondents whether they believe it is easy to start a business in their country. Figure 4.7 reports the share of adults aged 18–64 who responded positively, and compares results for 2023 and 2024. While perceptions remained relatively stable between the two years, cross-country differences were substantial. Luxembourg was well positioned in Europe. In 2024, 61% of respondents in Luxembourg stated that it was easy to start a business in the country, compared to a European average of 50%. This places Luxembourg 7th out of the 20 observed countries.

Figure 4.7: Easy to start a business.



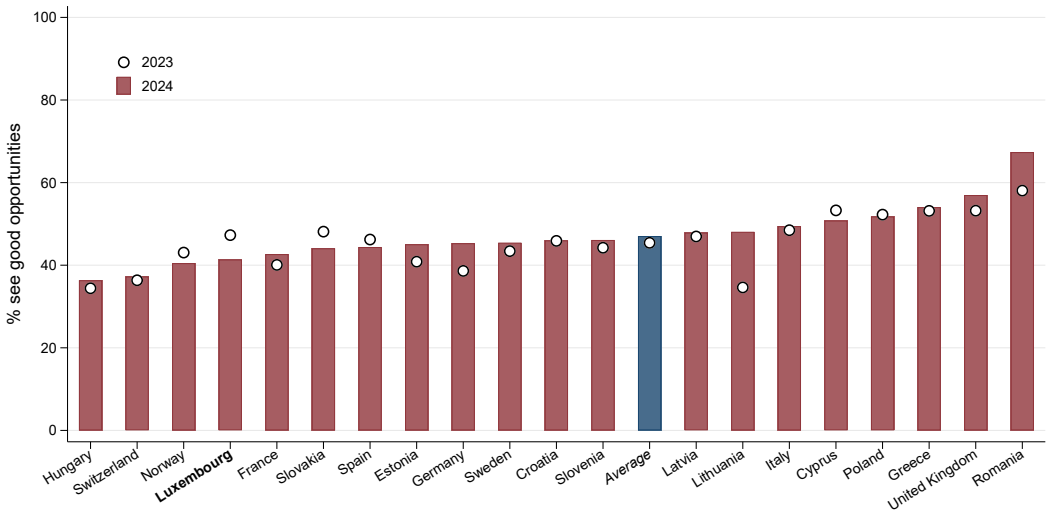
Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

Fear of failure could be regarded as a personality trait, but also as an additional indicator of economic "sentiment". Figure 4.8 illustrates the share of adults who perceive good business opportunities but hesitate to start a business due to fear of failure. Across Europe, in 2024 **fear of failure** rate remained largely stable compared to the previous year, with a European average of 47%. Notable exceptions include Lithuania, where the rate rose significantly from 35% in 2023 to 48% in 2024, and Romania, which saw an increase from 58% to 67%. Luxembourg stands in contrast to the general trend, recording the largest decline in fear of failure—dropping from 47% in 2023 to 41% in 2024. This places the country below the European average.[3]

Lastly, figure 4.9 shows the percentage of adults stating that they have the **necessary knowledge, skills, and experience** to start a business. Overall, this self-assessment remained steady, with declines observed in France, Spain, and Norway. In Luxembourg, the proportion of adults who declared to possess entrepreneurial skills was 49%, in line with the average across countries (51%).

[3]See discussion in Section 3.2 on fear of failure and the "new chance" scheme (*nouvelle chance*), approved on 20 July 2023.

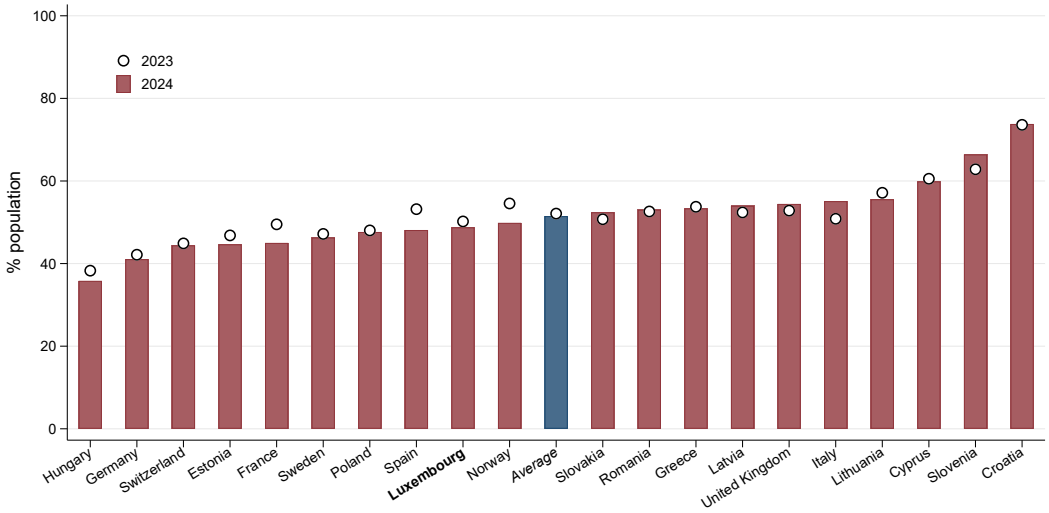
Figure 4.8: Fear of failure: you see good opportunities, but would not start a business for fear it might fail.



Shares of respondent who see good opportunities to start a business (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

The OECD's Entrepreneurial Ecosystem Diagnostics confirms the favourable position of Luxembourg that emerges from these data. This structured benchmarking tool evaluates entrepreneurial ecosystems across all 38 OECD countries. (see Section Chapter 9 for further details). In the period from 2020 to 2023, Luxembourg received a score of 78.4 out of 100 in the area of intermediate business services, which play a key role in lowering entry barriers for new ventures. This places Luxembourg 12th among the OECD countries assessed, indicating a generally supportive environment for entrepreneurship.

Figure 4.9: You personally have the knowledge, skills, and experience required to start a business.



Shares of adults (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

4.3 TEA entrepreneurs across Europe: motivation, innovation and expectations

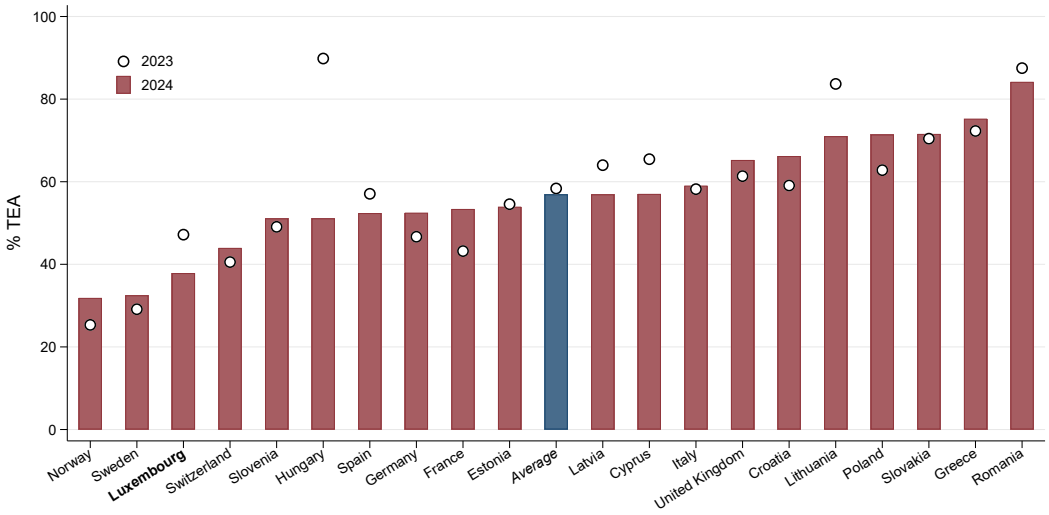
This section uses the cross-country dataset to explore entrepreneurs' motivations and expectations, and innovativeness of entrepreneurial ventures, in a comparative perspective. These aspects provide insights on quality and impact of entrepreneurship. Indeed, well-motivated and innovative entrepreneurs are regarded as drivers of productivity and economic growth, one of the channel being technological improvements (e.g., Erken et al., 2018; Lafuente et al., 2020). We first explore the distinction between opportunity-driven and necessity-driven entrepreneurs in our data. The concepts identify, respectively, individuals engaging in entrepreneurial ventures in response to identifiable business opportunities, and those who turn to entrepreneurship due to the lack of paid employment opportunities (one can refer to Section 3.4 for discussion). Subsequently, we examine the proportion of entrepreneurs who report introducing products and services new to their market. We conclude by focusing on growth expectations. Note that the statistics of this section are based on answers provided by TEA entrepreneurs.

Necessity and opportunity-driven entrepreneurs

Figure 4.10 shows the percentage of TEA entrepreneurs who reported having engaged in entrepreneurship "**to earn a living because jobs are scarce**" in 2024 (bars) and 2023 (circles). The data reveal wide cross-country variation, ranging from 32% in Norway to 84% in Romania. In 2024, 57% of TEA entrepreneurs created a business out of necessity, in line with the 58% reported in 2023. Some countries experienced notable declines in necessity-driven entrepreneurship — most significantly Hungary, where the share dropped from 90% in 2023 to 51% in 2024. Luxembourg also experienced a marked decrease, with the share of necessity-driven entrepreneurs falling from 47% in 2023 to 38% in 2024. This positions Luxembourg as the country with the third-lowest share of necessity-driven entrepreneurship in 2024. (This is further discussed in Section 3.4, where one observes an overall increasing trend for necessity, interrupted by a lowest point, 33%, recorded in 2021.)

Opportunity-driven entrepreneurship refers to the share of TEA entrepreneurs who report creating a business to make a difference in the world. Once again, we observe wide variations across countries. The overall average share remained stable, with values for 2023 and 2024 at, respectively, 42% and 43%. Out of the 20 countries observed, only six registered an increase in opportunity-driven entrepreneurship. The most notable case is Hungary, which in 2024 had the highest

Figure 4.10: Motivation is "to earn a living because jobs are scarce" (% of TEA).



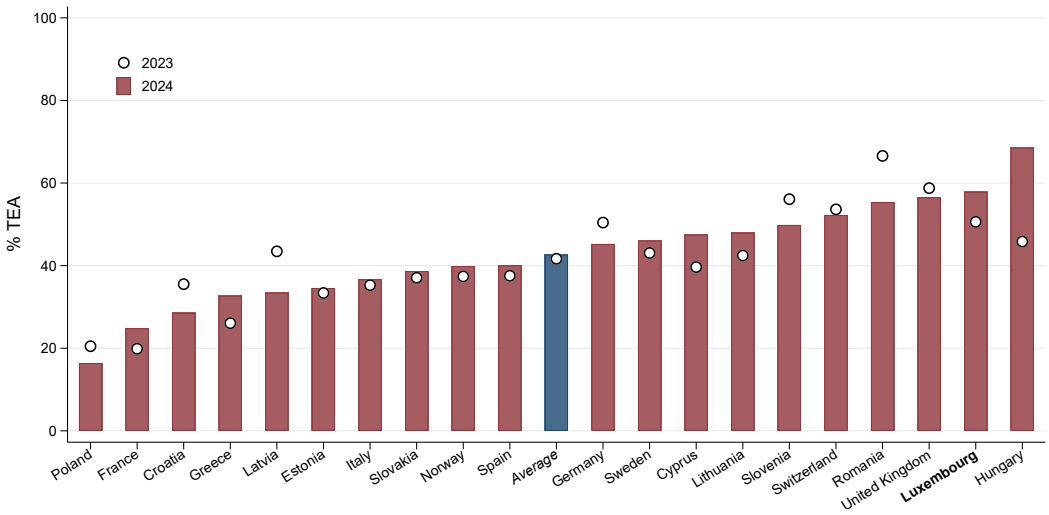
Shares of TEA entrepreneurs (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 and 2023 GEM Global APS data.

share of opportunity-driven entrepreneurship.[4] Luxembourg recorded a 6 percentage point increase (from 38% in 2023 to 43%), ranking second among the 20 countries observed in 2024. In contrast, the majority of countries recorded either a decline or a stable share of individuals starting a business to make a difference in the world. These data are depicted in Figure 4.11.

Luxembourg traditionally features among the highest levels of opportunity-driven entrepreneurship in international comparison. **The country exhibits the third lowest share of necessity-driven entrepreneurs, and the second highest share of opportunity-driven entrepreneurs.**

[4]For reference, in Hungary, GDP contracted by 0.8% in 2023 and grew by 0.5% in 2024. Growth is projected at 0.8% in 2025 and 2.5% in 2026 (European Commission, 2025)

Figure 4.11: Motivation is “to make a difference in the world” (% of TEA).



Shares of TEA entrepreneurs (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024and 2023 GEM Global APS data.

Innovation: new products and services

GEM investigates the innovativeness of new ventures by asking respondents whether their **products or services are new to their local area, country, or the world.** Figure 4.12 reports survey results.

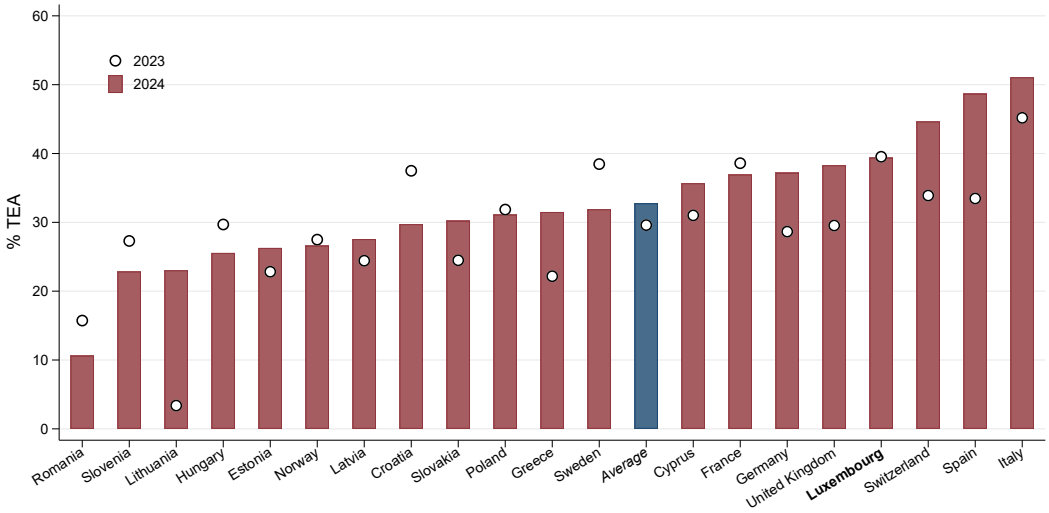
In 2024, the cross-country average share of TEA entrepreneurs declaring that their products or services were innovative increased slightly from 30% to 33%. About half of the country considered, nine out of twenty, reported an increase, while others showed minor changes or declines. Lithuania recorded the most notable improvement, rising from 3% to 23%. Italy, Spain, and Switzerland showed significant increases, and rank highest in terms of innovation. Due to a slight decrease in share (40% in 2023 and 39% in 2024), Luxembourg slipped from first to fourth in the rank (GEM Luxembourg, 2024).[5]

Despite methodological differences, these results are at least partially aligned with the European Innovation Scoreboard (EIS) 2024 (Commission et al., 2024), which evaluates the research and innovation performance of European countries using a composite index based on 32 statistical indicators. There, Italy and Spain are classified as "Moderate Innovator", while Luxembourg is classified as a "Strong Innovator" (see Figure 4.13).[6]

[5] In 2023, Italy reported a higher innovation rate (45%) compared to Luxembourg (40%). However, as Italy did not participate in the 2022 APS, it was not included in previous rankings (GEM Luxembourg, 2024).

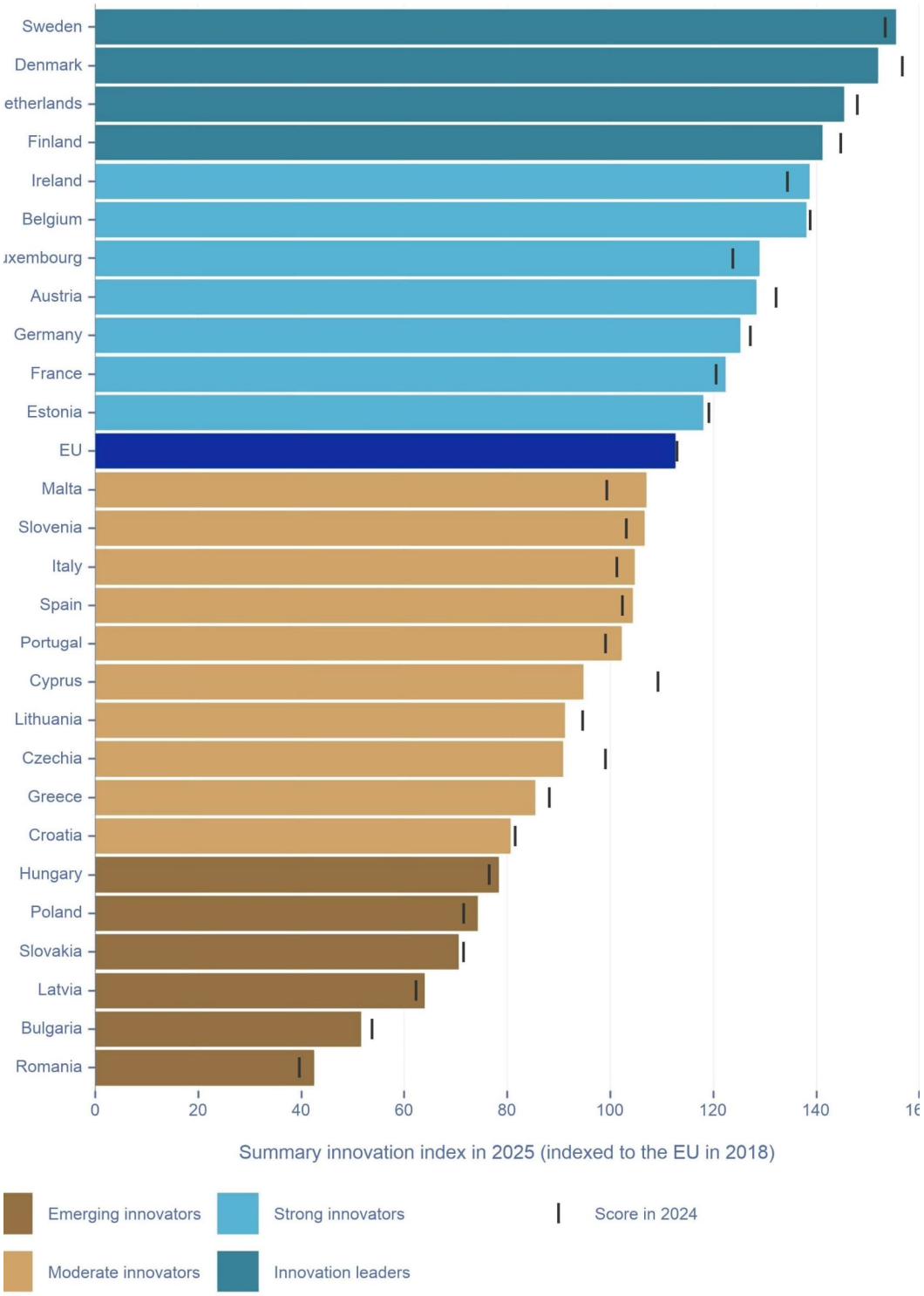
[6] The correlation between the EIS and GEM rankings is moderate and statistically significant (Spearman's $\rho = 0.52$, $p = 0.033$, $N = 17$), suggesting that while the two indicators capture related aspects of entrepreneurship, they do not overlap completely. For example, Sweden exhibits below average rankings in GEM but ranks first in EIS standings.

Figure 4.12: Entrepreneurs with new products (% of TEA).



Shares of TEA entrepreneurs (in %). Bars and circles refer, respectively, to the year 2024 and 2023.
Source: 2024 GEM Global APS data.

Figure 4.13: Innovation performance of the EU27 Member States, compared to 2024 (Commission et al., 2025).



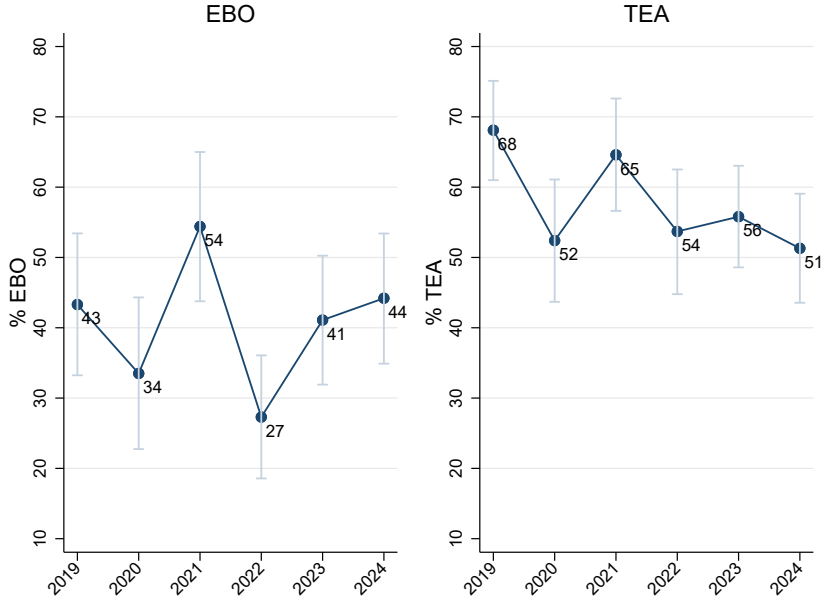
Note: Note: All performance scores are relative to that of the EU in 2018. Horizontal coloured bars show countries' performance in 2025, using the most recent data for 32 indicators. The vertical bars show performance in 2024, using the next most recent data
Source: European Innovation Scoreboard 2024 Commission et al. (2025, p. 28).

Exhibit: Innovation in Luxembourg over time

The introduction and diffusion of innovations is an important outcome of the entrepreneurial process. New ventures are generally regarded as potentially radically innovative because they are able to identify and exploit business and technological opportunities more efficiently than older firms. GEM establishes the innovativeness of new ventures by asking owners/managers: 1) the share of customers perceiving the main product of the new or established venture as new or unfamiliar; 2) the number of competitors offering the same product.[a]

Figure 4.14 shows the shares of innovative ventures on TEA and established entrepreneurs . (The figure display the proportion of TEA or established entrepreneurs - EBO - that declare to have at least one product OR process that is new to all or some customers AND that declare that few/no other businesses offer the same product.) The chart shows that, in 2024, 51% of TEA entrepreneurs reported being innovative compared to 44% of EBOs. [b] **According to self reports, early-stage entrepreneurs appear more innovative than established entrepreneurs.**

Figure 4.14: Entrepreneurs with new products OR processes, established and TEA.



Source: 2019-2024 GEM Global APS data.

[a] Note that respondents to this question are managers/owners of the business - and not their customers. Thus, the answers does not reflect the market's perception but those of managers.

[b] Note that the figure is higher than the one reported in the the cross-country chart 4.12, because here we consider both process and product innovation, while the cross-country data capture solely product innovation.

Growth expectations

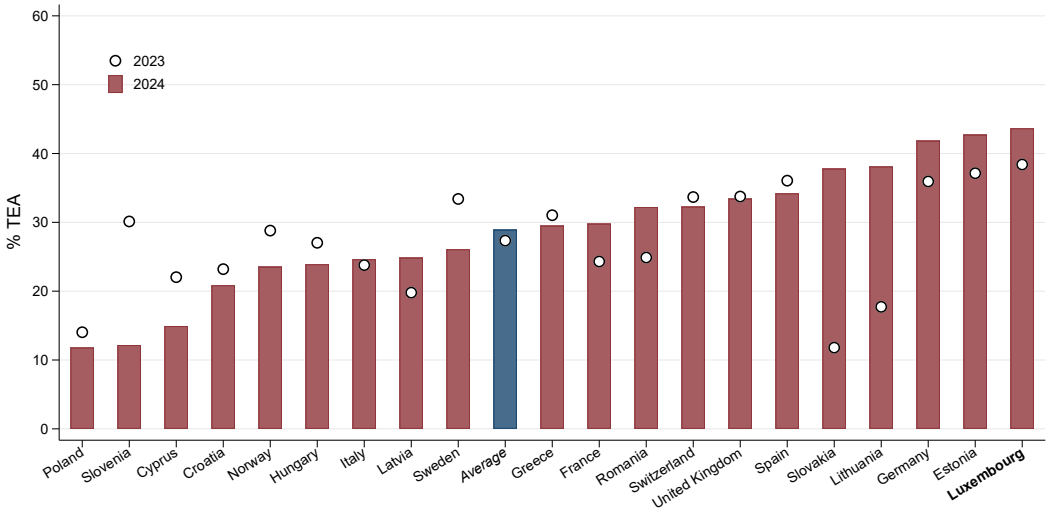
Despite a natural inclination among entrepreneurs towards excessive optimism (Hmieleski and Baron, 2009), research shows that entrepreneurs' expectations can serve as reliable indicators of overall business outcomes. (Kolvereid and Isaksen, 2017, have shown that expectations recorded during the business registration process can accurately forecast both immediate and future cumulative sales revenues and labour costs.) What is more, businesses' opinion surveys tend to be significantly correlated with business statistics (Remond-Tiedrez, 2005).

GEM investigates entrepreneurs' **expectations of future business growth**. Figure 4.15 shows the share of TEA respondents who reported lower growth expectations compared to the previous year. The data reveal substantial cross-country variation, as well as notable shifts in rankings over time. On average, one third of TEA entrepreneurs across the 20 surveyed countries reported reduced growth expectations (29%). In 2024, 9 countries were below this average, indicating relatively stronger optimism. In contrast, in 11 countries, the share of entrepreneurs with lower expectations exceeded the countries' average. Figure 4.15 also shows that, over time, the proportion of entrepreneurs with pessimistic growth expectations increased significantly in Slovakia and Lithuania, while it declined in Slovenia. Other countries recorded changes in either direction.

In 2024, entrepreneurs in Luxembourg were more likely to expect weaker growth than their European counterparts. **In Luxembourg, 44% of TEA respondents reported lower growth expectations in 2024, the highest record among all observed surveyed.** Luxembourg also ranked first in the previous year (GEM Luxembourg, 2024).

This observation finds support in other GEM indicators, such as (the fall in) perceived business opportunities (see Figure 4.6), and in additional externals sources pointing to a weakening economic outlook at the time of the data collection (STATEC, 2024a; STATEC, 2024b).

Figure 4.15: Growth expectations are lower than one year ago (% of TEA).



Bars and circles refer, respectively, to the year 2024 and 2023. Shares of TEA entrepreneurs (in %).
Source: 2024 GEM Global APS data.

5

The entrepreneurship ecosystem in Luxembourg: barriers, enablers and policy actions

This chapter provides descriptive evidence on institutional aspects and other contextual features of the **Luxembourg's entrepreneurial ecosystem**, based on questions administered only in Luxembourg. We focus on barriers, enablers and policy initiatives aimed at fostering entrepreneurship in Luxembourg. This information is valuable because it contributes to understanding what hampers, or favours, entrepreneurial activity in Luxembourg, and whether respondents have changed their view on these aspects over time. It also allows us to provide a first correlational assessment of the impact of policies initiatives for entrepreneurship. Section 5.1 presents data on perceived barriers to early-stage entrepreneurship in Luxembourg. Section 5.2 illustrates responses to a set of questions concerning the relevance and effectiveness of programmes to foster entrepreneurship in Luxembourg.

The primary concerns of early-stage entrepreneurs in Luxembourg appear to be, in this order: the availability of affordable office space, the availability of human resources, and funding. While a majority of the barriers indicators have improved over time, there are signs of deterioration in recent survey waves, especially for what concerns human resources and office spaces. The analysis of answers to questions on Luxembourg's policies suggests a p**ositive *association* between initiatives supporting entrepreneurial engagement and education, and entrepreneurship in the country**. This evidence is descriptive, but results are encouraging. Specifically, the share of people declaring that the deployment of institutional and ministerial initiatives have increased their interest in entrepreneurship has increased over time, and more so for TEA entrepreneurs . Entrepreneurial training is increasingly popular.

5.1 Barriers to early-stage entrepreneurship

Since 2016, seven dedicated questions ask GEM's APS respondents to assess **barriers and enablers of entrepreneurship in Luxembourg**. Respondents are asked to report their agreement with the following statements:[1]

1. I can easily access funding for launching and running my company.
2. I have time to launch a new company.
3. I can easily access needed information to start my company.
4. Dedicated training programs to start a new company are available and adequate.
5. I can easily access potential customers.
6. I can easily access office spaces that are affordable.

[1] Answers ranges on a Likert-scale from 1 (i.e. completely agree) to 5 (i.e. completely disagree).

7. Qualified and affordable human resources, needed for launching and running a new company, are available.

Figure 5.1 illustrates the evolution of perceived barriers to entrepreneurship during the period 2016 – 2024 *according to TEA entrepreneurs*. (The figures in the charts refer to the share of TEA entrepreneurs that strongly disagree or disagree with the statements, so that higher percentages represent a negative evaluation of the specific factor.)

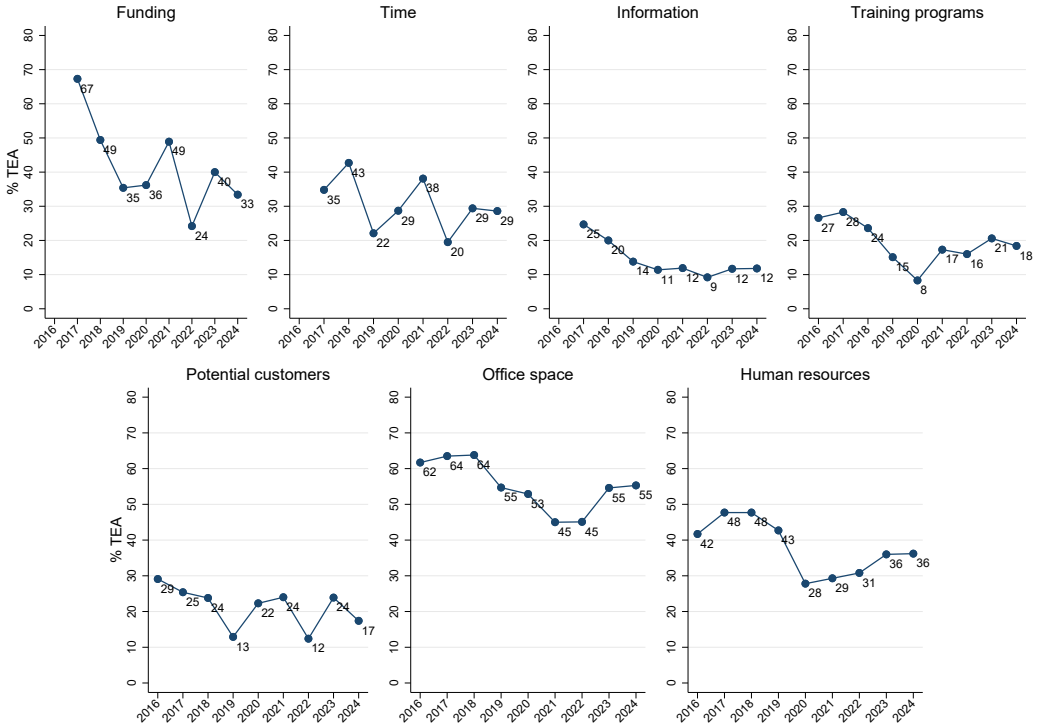
The primary concern of entrepreneurs in 2024 remains the availability of affordable office space: at least 55% of entrepreneurs disagree with the statement that they have easy access to affordable office facilities. **This is followed by the availability of qualified and affordable human resources, and funding.** (The latter indicator, however, displays a negative trend over the period and, at the same time, considerable variability, which calls for a cautious interpretation of its evolution.)

In 2024, the availability of affordable office space and of qualified human resources have remained largely stable compared to the previous year. These indicators, however, have been deteriorating since, respectively, 2021 and 2020. The availability of training program follows a similar pattern. Difficulties related to funding eased compared to 2023, with the share of entrepreneurs reporting lack of access to funding decreasing from 40% to 33%. Similarly, the proportion of entrepreneurs disagreeing with the statement that it is easy to access potential customers declined from 24% in 2023 to 17% in 2024.

Looking at the general evolution, most indicators have been displaying a general downward trend until the pandemic onset, suggesting that entrepreneurs have been perceiving the surveyed aspects as less problematic during that time. Since then, however, the indicators do show signs of deterioration, pointing to a challenging environment for entrepreneurs.

Caveats concern both the persistence of trends and the coverage of the survey. On the first aspect, more data will be needed to assess the robustness of recent developments. On the second aspect, the sample covers resident entrepreneurs only, neglecting non-resident entrepreneurs who may face different challenges and perceive barriers differently compared to residents. Nonetheless, our pilot study on cross-borders entrepreneurs show general alignment in their views of barriers across groups (see Chapter 8). The findings in this chapter are also consistent with results from the 2024 European Investment Bank Investment Survey (EIBIS) (European Investment Bank, 2025). According to the EIBIS, Luxembourg firms identified the lack of skilled labour and rising energy costs as the main long-term barriers to investment, while

Figure 5.1: Barriers according to TEA entrepreneurs (2016 – 2024).



Shares of TEA entrepreneurs that strongly disagree or disagree to the statements (%).
Source: 2016 – 2024 GEM Luxembourg APS data.

access to finance was among the least reported concerns. At the same time, the share of financially constrained firms reported in EIBIS follows a pattern similar to that observed in Figure 5.1 in the last three years: increasing from 2.4% in 2022 to 10% in 2023, before declining slightly to 9.2% in 2024. This is broadly in line with our data, where access to funding has generally improved over time but has recently regained importance as a perceived barrier.

5.2 Policy actions for entrepreneurship

In recent years, governments and policy organisations have been stepping up efforts to support entrepreneurial activities with dedicated policies and actions. In Europe, "The Entrepreneurship 2020 Action Plan" — a wide strategy elaborated by the EU Commission — focuses on improving entrepreneurial education, and on easing the administrative barriers to starting businesses.[2]

In this context, Luxembourg authorities have set up, or supported, programmes and initiatives that offer entrepreneurship education, advice and funding to entrepre-

[2]The main legal basis for the plan is 'The Small Business Act' of 2008. For an overview of related ongoing initiatives see `https://single-market-economy.ec.europa.eu/smes/supporting-entrepreneurship_en`

neurs, with the goal of improving public response and engagement in entrepreneurial activities. Released in 2023, the roadmap *From Seed to Scale* outlines five priorities to strengthen the start-up ecosystem, from early-stage support to improved access to talent and capital (Ministry of the Economy, Luxembourg, 2023).[3]

Among Luxembourg's initiatives, we find the House of Entrepreneurship, Nyuko, Fit4Start, and Fit4Entrepreneurship. Fit4Start, a flagship initiative, provides funding and advice to Luxembourg's innovative start-ups.[4] Other initiatives are aimed at improving entrepreneurial education, and provide ad-hoc training to students and school leavers. For example, the *mini-companies* by Jonk Entrepreneuren, aims to encourage students' entrepreneurial spirit at high school. Students are encouraged to create a business plan, and set up their own company to commercialise innovative products or services.[5]

Since 2015, the GEM Luxembourg's APS includes questions on the relevance and effectiveness of those programmes. The questions are as follows:[6]

1. *Has a campaign from institutional actors like the Chamber of Commerce, Government or an initiative that promotes entrepreneurship (Nyuko, Fit4Start, Fit4Entrepreneuship, etc.) raised your interest in entrepreneurship?*

2. *Have you ever taken part in a training about how to start a business at secondary school? For example through specific projects like mini-enterprise or corporate relevant lessons in economics, accounting or management?*

3. *Have you ever attended a training which would help you to start a business after leaving school?*

Figure 5.2 shows that, in 2024, 18% of respondents declared that institutional campaigns and initiatives have raised their interest in entrepreneurship, the highest value recorded since the introduction of the question. This share exhibits a steady increase over time, despite a trough during the pandemic years.

[3]Building on this, the 2025 Action Plan to Support Start-ups and Scale-ups detailed 10 points of action and allocates €300 million to scale-up financing, introduces new tax incentives, and launches initiatives such as a national Talent Desk and an AI Experience Center (Ministry of the Economy, Luxembourg, 2025).

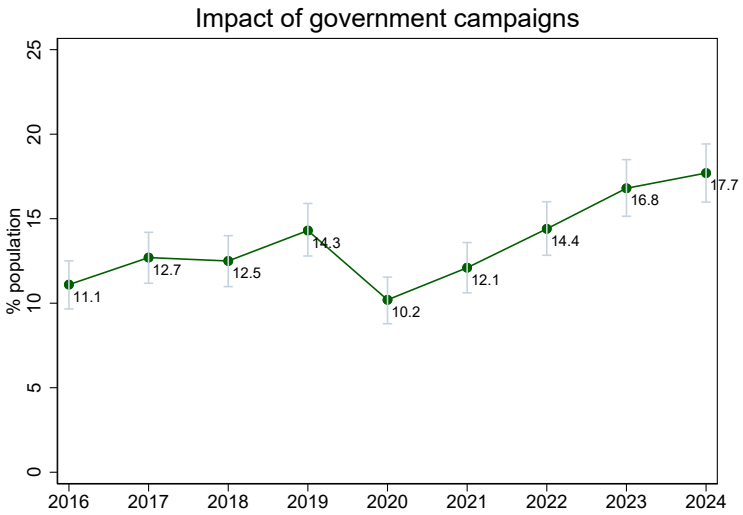
[4]Fit4Start is an initiative of Luxinnovation and of the Ministry of Economy, with the support of: Technoport, Luxembourg-city incubator, Luxembourg Space Agency, LuxProvide, Luxembourg House of Financial Technology and Luxembourg House of Cybersecurity https://www.fit4start.lu/

[5]Note that the National Experts survey (NES) indicates that entrepreneurial education is a major bottleneck for Luxembourg's entrepreneurial ecosystem; see Chapter 9.

[6]Question 1 is answered on a 1 (strongly disagree) to 5 (strongly agree) Likert scale, the remaining questions are answered with yes/no.

Since many initiatives are aimed at supporting entrepreneurs in the TEA phase, Figure 5.3 compares the evolution of early-stage entrepreneurs' (continuous green line) answers to non-TEA (red line) and general population's (dotted line) responses. Perhaps not unexpectedly, the initiatives have consistently raised more awareness among TEA entrepreneurs (47% in 2024) than among non-TEA respondents (15% in the same year). The share of respondents that declare that the initiatives have increased interest in entrepreneurship is increasing over time for all groups, but more steeply for TEA entrepreneurs .[7] This pattern suggests **a positive *association* between initiatives supporting entrepreneurial activities and interest in entrepreneurship** .

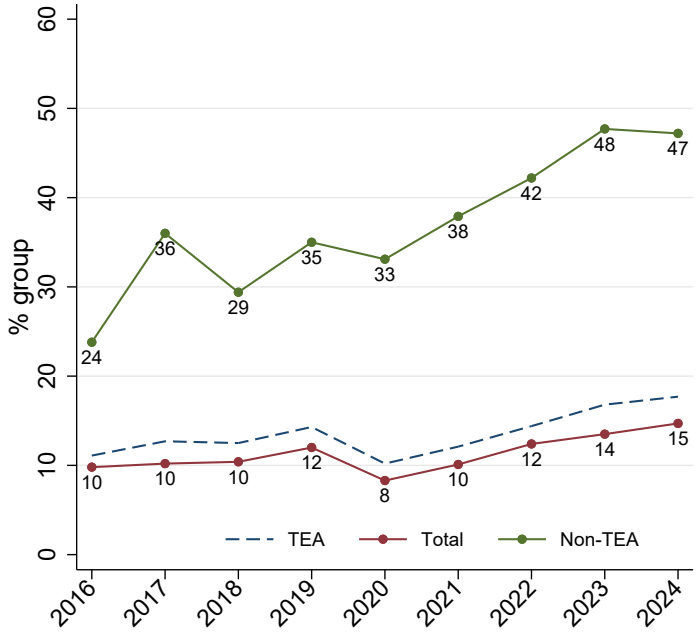
Figure 5.2: Interest in entrepreneurship raised by campaign.



Share of population that agree or strongly agree that campaign have raised their interest in entrepreneurship. Data for 2015 not reported due to changes in coverage.
Source: 2016 – 2024 GEM Luxembourg APS data.

[7]The population average is naturally closer to that of non-TEA respondents due to the relatively low proportion of TEA entrepreneurs in the population. Non-TEA sample includes both potential and established entrepreneurs.

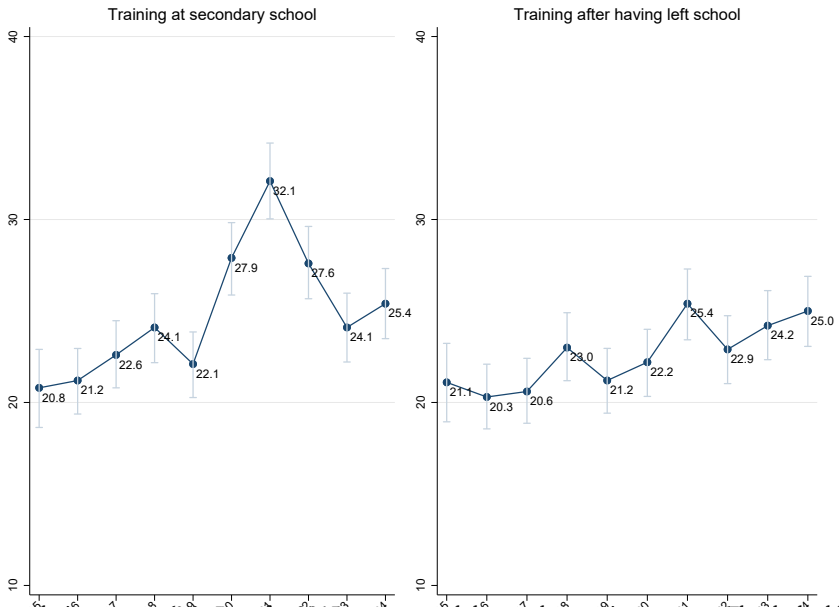
Figure 5.3: Interest in entrepreneurship raised by campaign by TEA status.



Shares by population groups (%). Data for 2015 not reported due to changes in coverage. The dashed line refers to the whole sample. The non-TEA sample includes both potential and established entrepreneurs.
Source: 2016 – 2024 GEM Luxembourg APS data.

Figure 5.4 reports the shares of the population who attended a training at secondary school (left panel), and after leaving school (right panel). One can see that, while the proportion of respondents attending training after school is relatively stable with a slight upward trend, the share of individuals who received training at school showed a peak during the COVID period. It raised from 22% in 2019 to 32% in 2021, followed by a steep decrease. Subsequently, training at school increases slightly, settling back to a mildly increasing trend (24% of respondents in 2023 and 25% in 2024 declared to follow a training at school). [8] The share of respondents that followed training after school exhibits a moderate positive trend over the period.

Figure 5.4: Training at secondary school and after leaving school.



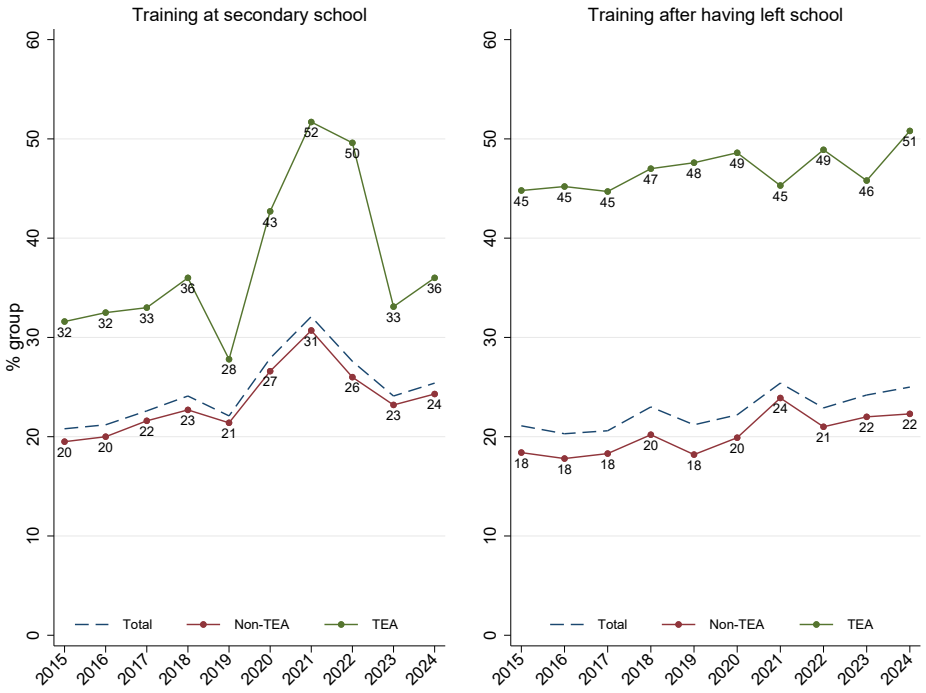
Shares by population groups (%). Data for 2015 not reported due to changes in coverage. The dashed line refers to the whole sample.
Source: 2016 – 2024 GEM Luxembourg APS data.

[8] Previous GEM report indicates that the increase in training during the pandemic was driven by the age group 18-34, an observation consistent with the increased activity of promotion of entrepreneurship in schools reported by Jonk Entrepreneuren (GEM Luxembourg, 2024).

Finally, we investigate whether the responses on training vary according to the respondents' roles in the entrepreneurial process. Figure 5.5 illustrates that the share of individuals who attended training was consistently higher among TEA entrepreneurs (green continuous line) than among respondents (dashed lines) or non-TEA respondents (red continuous line). This holds throughout the period, and for both secondary school training and post-secondary education. In 2024, 36% of TEA entrepreneurs attended training at school compared to 24% of non-TEA respondents. The gap widens for post-secondary training; in 2024, 51% of TEA entrepreneurs attended such training, whereas only 22% of non-entrepreneurs did so.

This suggests **a positive *association* between the provision of entrepreneurial training and setting up and running a new business**. These results are encouraging, but they should be interpreted with care. They show that training programmes are popular, especially among entrepreneurs. What is more, they show that overall entrepreneurship training are increasingly popular. These answers, however, do not allow us to establish that institutional initiatives lead to an increase in entrepreneurial activities; in other words, results should not be read as "training have led people to become entrepreneurs ". Nonetheless, nearly half of entrepreneurs take part into these training. This suggests that individuals that are more willing/are starting a business are also more receptive to entrepreneurship-oriented initiatives, or are more motivated to learn entrepreneurial skills.

Figure 5.5: Entrepreneurship trainings at school by TEA status.



Data for 2015 not reported due to changes in coverage. The dashed line refer to the whole sample. Non-TEA sample includes both potential and established entrepreneurs.
Source: 2016 – 2024 GEM Luxembourg APS data.

6

Sustainable Development and entrepreneurship

"*Humanity has the ability to make development sustainable to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs.*" World Commission on Environment and Development (1987, point 3.27)

This chapter reports results from the 2024 Global GEM's questions on sustainable entrepreneurship. The link between sustainable development and entrepreneurship emerges from the growing need of new production methods and technologies to meet environmental and social objectives, as set forth by the United Nations Sustainable Development Goals (UNSDGs). The relevance of this issue is outlined by the UN General Assembly's adoption, in December 2020, of Resolution 75/211 on entrepreneurship for sustainable development.

The GEM's questions on sustainability interrogate entrepreneurs on the relevance they attribute to social and environmental considerations when making business decisions, and on the extent to which they prioritise maximising social impact and minimising environmental of their business actions. Our comparative analysis of the questions focuses on the answers provided by early-stage (TEA) entrepreneurs . The chapter includes one exhibit on sustainability reporting by Luxembourg's firms.

The data suggests that environmental and social considerations are very relevant for early-stage entrepreneurs across Europe. **In Luxembourg, data reveal a higher than average share of early-stage entrepreneurs focused on reducing their business's environmental impact and enhancing social value, positioning it as a leader in sustainable entrepreneurship.** This is reflected in the decision-making process, but also in actions put in place to minimise environmental impact and maximise social impact. Overall, GEM data highlights that Luxembourg's entrepreneurs are committed to sustainability.

This result is in line with the significance of the Environmental Goods and Services Sector (EGSS) and the Social and Solidarity Economy (SSE) in the national economy. What's more, an analysis from the ICT usage survey for enterprises indicates that reporting of sustainability practices follows an increasing trend among Luxembourg's firms, providing support for GEM results. The number of firms engaged in sustainability rose from 14.7% in 2014 to 20.0% in 2023 but slight decline to 21.4% of 2023 .

6.1 United Nations Sustainable Development Goals

Sustainable development, defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs", aims to reconcile economic activity with environmental preservation to ensure the well-being of both current and future generations. The definition of sustainable development was first introduced by the United Nations Brundtland Commission's Report, "Our Common Future", in 1987. This concept has gained global recognition with the adoption of the **2030 Agenda for Sustainable Development by the United Nations (UN)**, in September 2015. The Agenda, which extends the scope of sustainability to the social dimension, lists 17 **Sustainable Development Goals** (SDGs), and includes 169 measurable targets to enable the quantitative assessment of progress towards SDGs. Goals and targets span social, environment, and economic dimensions. Figure 6.1 provides an overview of the goals. The 2025 progress assessment reveals that the world remains far off track from achieving the 2030 Agenda (United Nations, 2025, p. 4).[1]

The UN recognises the role that entrepreneurship can play in reaching the SDGs. In December 2020 the UN General Assembly adopted the **UN Resolution 75/211 on entrepreneurship for sustainable development**. The resolution recognises the significant contribution that entrepreneurship makes to sustainable development by creating jobs, driving inclusive economic growth and innovation, improving social conditions, and addressing economic, social, and environmental challenges within the SDGs agenda. The resolution emphasises the role of social entrepreneurship, and of micro, small and medium-sized enterprises in social and economic development (UN General Assembly, 2020).

6.2 Sustainability and TEA entrepreneurship across Europe

In the context of the efforts to meet the Agenda's SDGs, since 2022, GEM administers questions on sustainability and entrepreneurship (GEM (Global Entrepreneurship Monitor), 2025).[2] Specifically, the questions aim to investigate the importance that entrepreneurs attach to social and environmental implications when making

[1] Progress is slow. In 2025, 18% of the 135 measured targets are on track—compared to 17% in 2024 and 15% in 2023 (United Nations, 2025; United Nations, 2024; United Nations, 2023).

[2] The 2023/2024 global GEM report shows that many entrepreneurs integrate sustainability into business strategy, though practices vary by region. Entrepreneurs in Latin America and East Asia are particularly active in this area (GEM (Global Entrepreneurship Monitor), 2025).

business decisions, and the extent to which entrepreneurs implement sustainability practices.

Figure 6.1: UN Sustainable Development Goals

Source:United Nations.

Sustainability considerations in decision making.
Entrepreneurs are asked to rate their agreement, on a scale from 1 (lowest) to 5 (highest), to the following statements:

- When making decisions about the future of your business, **you always consider social implications** such as access to education, health, safety, inclusive work, housing, transportation, and quality of life at work.
- When making decisions about the future of your business, **you always consider environmental implications** such as preservation of green areas, reduction of the emission of pollutants and toxic gases, selective garbage collection, and conscious consumption of water, electricity, and fuels.
- **You prioritize** the social and/or environmental impact of your business above profitability or growth.

Sustainability implementation.
Additionally, entrepreneurs are asked whether they implement specific actions, with the following yes/ no questions:[3]

- **Have you taken any steps to minimize the environmental impact of your business over the past year?** This could include energy-saving measures, re-

[3]Interviewers are instructed to provide relevant examples to help clarifying the questions.

ducing carbon emissions, introducing more efficient machinery, managing solid waste, using recyclable materials, and promoting alternative transportation methods such as cycling, walking, collective rides, and public transportation.

- **Have you taken any steps to maximize the social impact of your business over the past year?** This could include hiring young unemployed individuals and other groups with limited access to the labour market; incorporating social enterprises into your supply chain; ensuring workforce diversity; prioritizing companies and/or suppliers that respect human rights and the environment when purchasing products or services; combating child or slave labor; invest or support projects or social organizations that develop the community and include less favored groups.

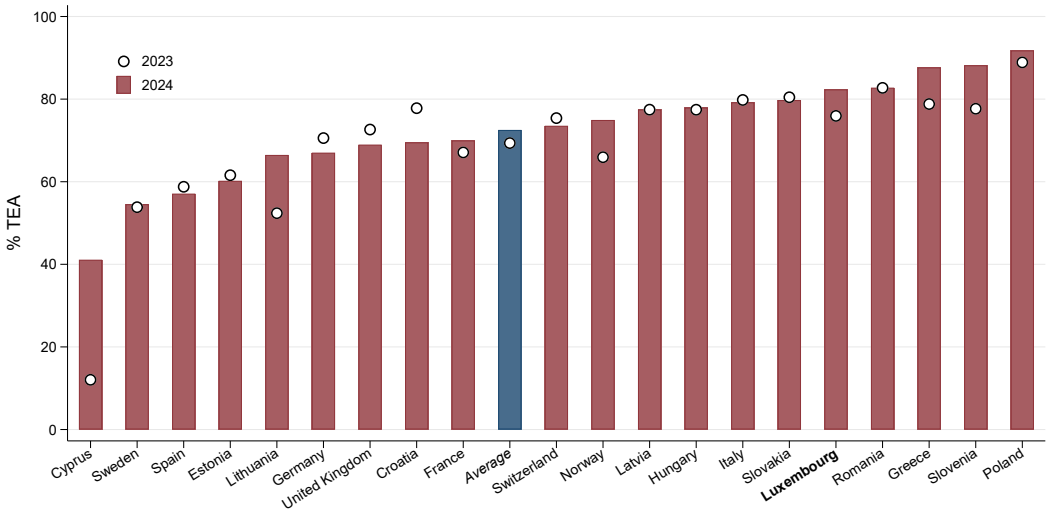
Using the answers to the questions above, what follows provides comparative evidence on the sustainability preoccupations and engagement of TEA entrepreneurs across Europe. Data refers to the year 2024 (2023 data are also reported for comparison). Results suggest that social and environmental considerations are very relevant for early-stage entrepreneurs.

Figure 6.2 shows that, on average, 73% of TEA entrepreneurs consider environmental implications in business decision making, a slight increase from the 69% recorded in 2023. In all countries but one, more than 50% of TEA entrepreneurs reported considering environmental implications. (An exception is Cyprus, which, despite a significant increase from 12% in 2023 to 41% in 2024, remains below the 50% level.) Luxembourg is above the average, with 82% of early-stage entrepreneurs considering the environmental implications of their business decisions (it was 76% in 2023).

Figure 6.3 shows a pattern very similar to that seen in Figure 6.2. The cross-country average of TEA entrepreneurs that always consider the social implications of their business decisions is 73% in 2024 (slightly up from 68% in 2023). Luxembourg continues to rank above the average, with an 80% share in 2024 (up from 74% in 2023). This observation also supports the view that social and environmental aspects are dimensions of a broader underlying sustainability concept.

GEM also provides information on what objectives entrepreneurs prioritise when making decisions. Figure 6.4 shows the proportion of TEA entrepreneurs who declare to prioritising the social and/or environmental impact of their business over profitability or growth. Here, the countries shares are generally lower and exhibit greater variability. Nonetheless, in 2024 about half of the early-stage entrepreneurs (53%) declare to prioritise the social and environmental impact of their business over profits. In twelve out of twenty countries, a majority of TEA entrepreneurs prioritise social

Figure 6.2: Always consider environmental implications when making business decisions.



Share of TEA entrepreneurs that strongly disagree or disagree to the statement (in %).
Source: 2024 GEM Global APS data.

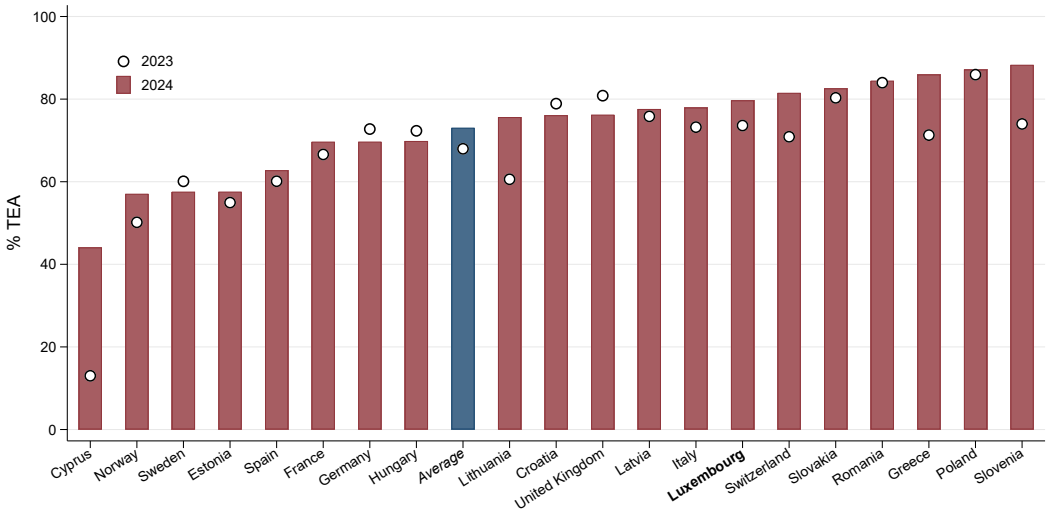
and environmental impacts considerations when making decisions. Luxembourg is among these countries, with a 54% recorded both in 2023 and 2024.

To effectively impact sustainability, considerations of social and environmental impacts when making decisions must translate into effective action (Hall et al., 2010). For this reason, GEM explicitly asks entrepreneurs whether they have taken steps to minimise their environmental impact or maximise their social impact.

Figure 6.5 reports the proportion of TEA entrepreneurs who have taken actions to minimise environmental impact in the past year. About half of TEA entrepreneurs respond affirmatively. In 2024, 9 out of 19 countries score above this average. Luxembourg ranks fourth among the countries considered, with 61% of its TEA entrepreneurs reporting efforts to actively minimise environmental impact, down slightly from 66% in 2023.

Figure 6.6 reports the proportion of TEA entrepreneurs who have taken actions to maximise social impact over the past year. The cross-country average is 42% in 2024, in line with the previous year. Luxembourg improved from 54% in 2023 to 57% in 2024. Luxembourg ranks first among the countries considered, with the highest share of TEA entrepreneurs actively working to maximise their business' social

Figure 6.3: Always consider social implications when making business decisions.



Share of TEA entrepreneurs that strongly disagree or disagree to the statement(in %).
Source: 2024 GEM Global APS data.

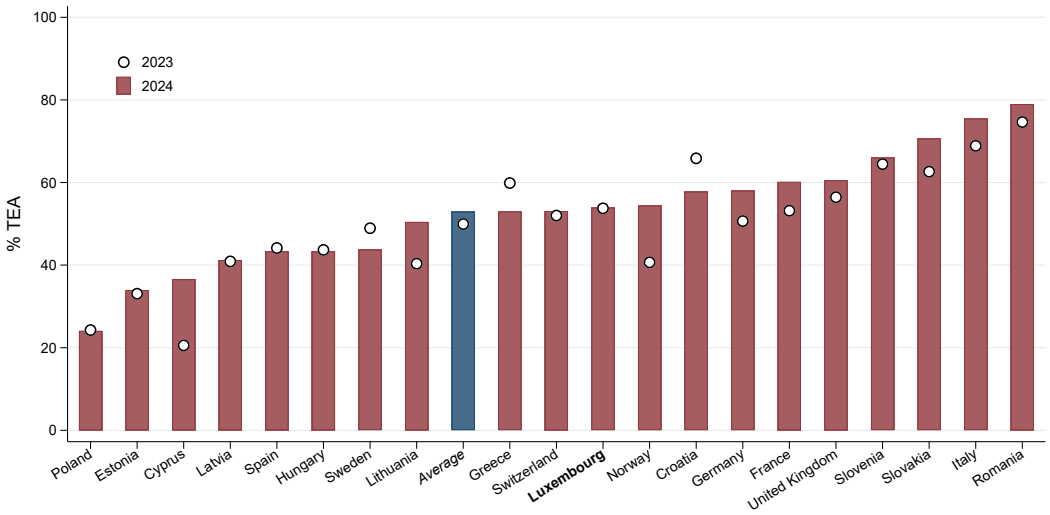
impact in 2024.[4] Once again, country rankings for both indicators are positively related.[5]

Overall, **the data highlight Luxembourg's entrepreneurs strong commitment to sustainability**. Despite the broader focus of the GEM questions, this result is in line with the significance of the Environmental Goods and Services Sector (EGSS) and the Social and Solidarity Economy (SSE) in the national economy. According to STATEC's most recent publication, in 2020 the EGSS accounted for 4.7% of total employment and generated a Gross Value Added (GVA) of EUR 1.9 billion, representing 3% of total GVA (Georgescu and Thunus, 2023). In 2023, the SSE comprised 6.1% of total salaried employment, contributing approximately EUR 2.3 billion to GVA, or 3% of the national total (STATEC, 2023). Even if not directly comparable due to a change in methodology, these figures are higher than in 2020, when the share of employment in the SSE was 4% of total salaried employment and 2.2% of national GVA (Schmitz, 2022).

[4]It is plausible that the regulatory and institutional environment encourages this good result. In Luxembourg, several initiatives provide support social entrepreneurship, including a dedicated social business incubator, a legal framework for the "Société d'Impact Sociétal" (SIS), and the "IMPACT LUXEMBOURG" label. See: `https://economie-sociale-solidaire.public.lu/fr.html`. However, note that the questions covers aspects beyond social entrepreneurship.

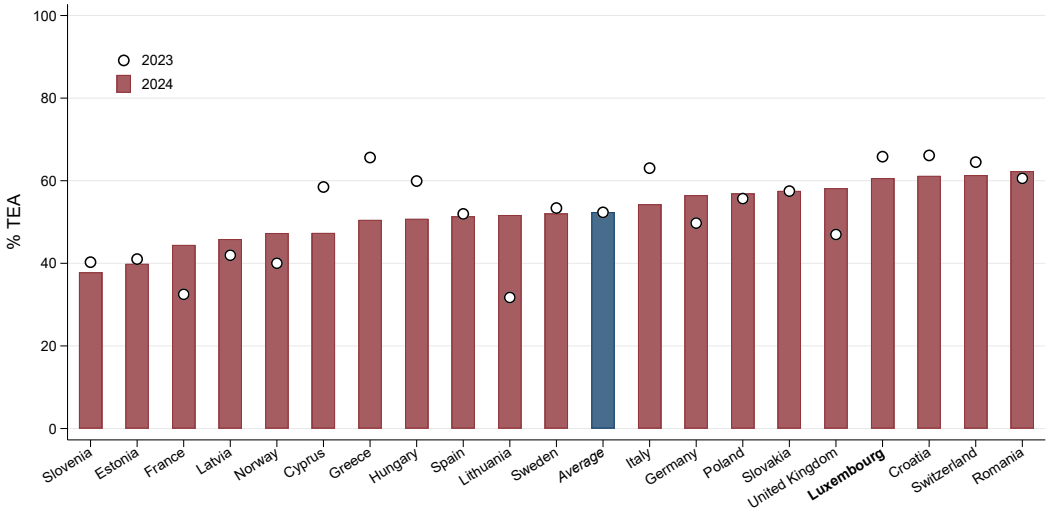
[5]The correlation between the proportion of TEA entrepreneurs reporting social maximisation and those reporting environmental minimisation is 80% both in 2023 and 2024.

Figure 6.4: Prioritize social and/or environmental impact of business over profitability or growth.



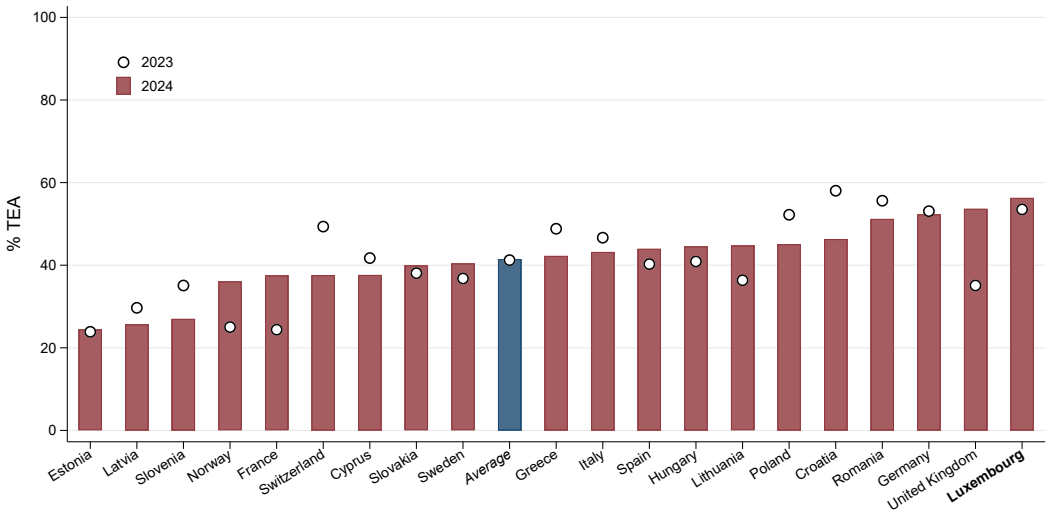
Share of TEA entrepreneurs (in %). Source: 2024 GEM Global APS data.

Figure 6.5: Have taken steps to minimize the environmental impact of the business over the past year (% of TEA).



Share of TEA entrepreneurs (in %). Source: 2024 GEM Global APS data.

Figure 6.6: Have taken steps to maximize the social impact of the business over the past year (% of TEA).



Source: 2024 GEM Global APS data.

Exhibit: Reporting sustainability practices in Luxembourg.

How widespread are sustainability practices in Luxembourg? To address this question, this exhibit provides evidence on reporting activities. Reports can be used as proxies to provide a first quantification of the diffusion of sustainability practices among Luxembourg's firms.

In recent years, numerous initiatives have been launched to promote the adoption and disclosure of social and environmental practices by businesses. Some initiatives consists of voluntary efforts by companies, the idea being that sustainable activities during regular business operations have to exceed legal requirements to achieve social and environmental objectives. Several terms are used to describe these efforts, including Corporate Social Responsibility (CSR), Environmental, Social, and Governance (ESG), business ethics, impact finance, etc.. However, 'Sustainability' and 'ESG' are now prevalent (Filosa et al., 2021).[a] To facilitate and communicate these activities, companies make use of various standards, certifications and labels (e.g., ISO 14001, ESR – Entreprise Responsable, B-corp).[b]

Significant regulatory developments have also taken place. In 2014, the EU adopted the Non-Financial Reporting Directive (NFRD) (European Parliament and Council of the European Union, 2014), which requires large European firms to disclose certain ESG information. The number of firms falling under the directive's scope is relatively limited. In Luxembourg, Wexgerber (2022) estimated that around 60 firms were required to comply with the NFRD, but only one-third of them published their sustainability report on their website in 2022. In 2022, the EU expanded the scope of the NFRD, and adopted the Corporate Sustainability Reporting Directive (CSRD) to improve the transparency of corporate sustainability disclosures. The CSRD mandates large European companies to publish detailed sustainability reports and disclose ESG information (European Parliament and Council of the European Union, 2014). Although many SMEs remain outside the scope of the CSRD, they may still be required to provide ESG data to larger business partners.

Sustainability regulations significantly impact also the financial sector. Financial intermediaries under the scope of the Sustainability-Related Disclosures in the Financial Services Sector (SFDR) are required to disclose how they incorporate ESG factors into their investment decision-making processes. This practice is

often referred to as sustainable finance and data suggest that it plays an important role in Luxembourg. (At the end of June 2024, Luxembourg domiciled ESG funds managed assets worth approximately €3.25 trillion, representing nearly three-quarters of all UCITS (PwC Luxembourg and Luxembourg Sustainable Finance Initiative (LSFI), 2024). This marks clear progress from June 2022, when ESG fund assets stood at €2.2 trillion, or 54.6% of total fund assets (LSFI, 2024).

Given the regulatory environment and voluntary schemes, **to what extent companies in Luxembourg declare to adopt sustainable practices, and how this has evolved over time**?

The House of Sustainability conducted dedicated surveys on sustainable development in 2022 and 2024. These surveys are known as *Panorama du Développement Durable* and cover approximately 600 Luxembourg-based firms each year. In 2024, 17% of respondents reported having a formalised sustainable development strategy, while an additional 18% indicated they were in the process of developing one. (Chambre de Commerce/IMS/INDR, 2022; House of Sustainability, 2024). The surveys also report that 30% of respondents stated that their sustainability strategy was communicated on their website in 2024, up from 27% in 2022.

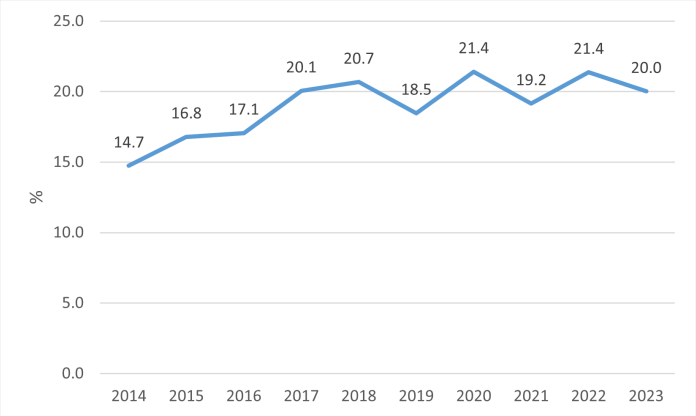
The ICT Usage Survey for Enterprises is an important source of official statistical information on CSR adoption. The survey is representative of the non-financial business economy of Luxembourg. Since 2014, it includes a specific question on firms' engagement in CSR. Participating firms are asked whether their websites feature pages presenting the company's approach to *"Corporate Social Responsibility"* or *"sustainable development."* Based on the ICT survey data, figure 6.7 evidences an overall increase of the number of firms reporting their engagement in sustainability, which rose from 14.7% in 2014 to 20.0% in 2023.[c]

This result needs to be interpreted cautiously as the data do not provide information on the intensity of sustainability efforts. Moreover, it is possible that self-reporting may encourage firms to overstate their sustainability practices, a practice known as *greenwashing*. Nevertheless, this pattern suggests **a growing awareness and reporting of sustainability practices among Luxembourg's enterprises.**

Riillo and Sarracino (2014) used the same data to explore the link between firm's features and CSR disclosure in Luxembourg. The study finds that the typical firm that adopts CSR practices is a large market leader, part of an international

group, with a strong international reputation and operating in the utilities sector. Firms reporting CSR are motivated both by their internal corporate culture and by the positive impact on their brand image.

Figure 6.7: Firms that have a webpage presenting their 'Corporate Social Responsibility' or 'sustainable development' engagement (% share).



Source: Survey on ICT usage in enterprises, 2014 – 2023 waves(STATEC).

[a] The United Nations Sustainable Development Goals, Target 12.6 uses exclusively the term sustainability reporting https://sdg12hub.org/sdg-12-hub/see-progress-on-sdg-12-by-target/126-sustainability-reporting-businesses#indicator-item-0

[b] For examples of international standards, see ISO 14001 at https://www.iso.org/standard/60857.html, ISO 26000 at https://www.iso.org/iso-26000-social-responsibility.html, Net Zero Guidelines https://www.iso.org/netzero. and B-Corp at https://www.bcorporation.net/en-us/. Examples of labels adopted in Luxembourg are: ESR–Entreprise Responsable at https://indr.lu/fr/les-services-aux-entreprises/beneficier-du-label-esr/entreprises-labellisees-esr/, IMPACT LUXEMBOURG at https://www.impactluxembourg.lu/fr/obtenir-le-label/ and LuxFLAG https://luxflag.org/what-we-do/labels/

[c] The comparison of ICT and *Panorama du Développement Durable* surveys indicates that official statistics are more conservative. Among other factors, official surveys are less prone to selection bias. For example, firms with stronger sustainability practices are more likely to participate in the voluntary *Panorama du Développement Durable* survey than in the mandatory ICT usage survey.

7

The 2024 special topic: Artificial Intelligence and entrepreneurship

This chapter reports results from the 2024 Global GEM's special module on Digitalisation and Artificial Intelligence (AI). In the module, entrepreneurs assess the importance of digital technologies and AI for their businesses. Specifically, they are asked to state the importance of digital tools and AI for day-to-day business operations, and their role in implementing the company's business model and strategy. Entrepreneurs are also asked about their expectations on the future importance of AI for the development of their businesses, and on benefits and risks associated with AI adoption.

AI is an important technology that is reshaping the business environment, and changing how firms discover, design and produce products and services. By lowering the cost of prediction, classification and content generation, AI allows entrepreneurs to experiment faster with new products and services, reach more customers, and lower operational costs. It also reduces the costs of implementing data-driven business models. In this sense, AI augments the capabilities of entrepreneurs (Chalmers et al., 2021; Fossen et al., 2024).

AI adoption and its economic and societal consequences are at the forefront of the policy debate. For example, macroeconomic studies on innovation indicate attainable, but non-automatic, productivity gains over the coming decade (Filippucci et al., 2024; Aghion et al., 2019). In Luxembourg, policy-makers aim to support AI adoption in the economy, stimulating research, innovation, and entrepreneurship, while at the same time addressing its potential risks. This holistic strategy is set out in the Luxembourg's government Digital Strategy (Grotz et al., 2019).[1]

In everyday use, the term "AI" often refers to Generative AI (Gen-AI), the most well-known application of artificial intelligence.[2] In this report, unless otherwise specified, the terms AI and Gen-AI are used interchangeably. (The exhibit in this chapter provides additional terminology and explanation on AI.)

The 2024 GEM APS special module on digitalisation and AI consisted of the following questions, aimed at capturing entrepreneurs' current and expected use of digital technologies, as well as their perceptions of AI's potential opportunities and risks for their business activities:

[1]The latest strategy covers aspects such as infrastructure design, to talent and skills, and governance and emphasises applied, "human-centric" AI in finance, mobility and health, with strong attention to data protection and cybersecurity. See `https://gouvernement.lu/dam-assets/images-documents/actualites/2025/05/16-strategies-ai-donnees-quantum/2024115332-ministere-etat-strategy-ai-en-bat-acc-ua.pdf`.

[2]Artificial Intelligence (AI) is a broad scientific field. Generative AI is a subset of AI that creates new content such as text, images, or code from simple natural-language prompts (Fossen et al., 2024).

1. How important are the following to your day-to-day business operations: (1) Email communication with customers and employees; (2) Email marketing (e.g., MailChimp); (3) A company-branded website for information and communication; (4) Social media platforms such as Instagram, X/Twitter, Facebook, and TikTok;
2. How important are the following to implementing your business model and strategy: (1) A company-branded website for e-commerce; (2) Data analytics tools (e.g., Excel, Tableau, Google Cloud Datalab); (3) Cloud computing services (e.g., Dropbox for storage, Zoom for video conferencing, Xero for accounting); (4) Artificial Intelligence (e.g., ChatGPT); (5) Open-source solutions (e.g., MySQL/MariaDB for databases, Linux-based distributions, JavaScript, Python, R, C);
3. How important do you anticipate artificial intelligence tools will be for implementing your business model and strategy in the next three years;[3]
4. For each of these, please rate how you believe they would impact your business when introducing AI: (1) Data security and privacy concerns; (2) Increased costs and implementation challenges; (3) Employee resistance; (4) Ethical dilemmas; (5) Customer resistance or mistrust;
5. For each of these, please rate how you believe they would impact your business when introducing AI: (1) Enhanced customer personalization; (2) Improved productivity and efficiency; (3) Innovative product and service development; (4) Better risk management and compliance; (5) Increased revenue and business growth.

The remaining of this chapter examines twelve harmonised indicators on AI among TEA entrepreneurs, derived from responses to the questions above introduced in 2024. These indicators refer exclusively to TEA respondents and are based on the share of entrepreneurs who selected "very important" when assessing the importance of AI, and "high" when evaluating its positive or negative impacts.

Results show that **Luxembourg leads Europe in the importance of AI for early-stage entrepreneurs**, and ranks second on its **expected importance** over the next three years. This suggests that AI is already part of business models in Luxembourg and its role is expected to grow further. This is also consistent with information from official statistics(STATEC, 2025).

[3]Answers for questions 1 — 3 are provided on the following scale: very important, somewhat important, or not important.

Exhibit: Generative AI, in a nutshell

What is AI? A practical definition sees AI as systems that interpret external data, learn from it, and use those learnings to achieve specific goals through flexible adaptation. In practice, today's systems rely heavily on machine learning and deep learning to perform prediction, recognition and decision support (Fossen et al., 2024).

What is *generative* AI? Generative AI models create new content — text, code, images or audio — after training on large corpora. In work contexts, they draft and summarise documents, generate code, and co-create customer-facing materials, reducing the threshold for task automation and augmentation (Implement Consulting Group, 2024).

How AI works. Large language models produce text token-by-token; image models iteratively denoise from random noise towards a picture aligned with a prompt; other families couple generators and discriminators to improve realism. Performance is underpinned by deep learning architectures and large datasets, with domain adaptation via fine-tuning (Fossen et al., 2024).

What entrepreneurs (as users) can do. Users provide prompts in plain language ("Summarise this proposal", "Draft onboarding emails"), iterate, and embed outputs into workflows. Because interfaces are natural-language based, SMEs can adopt without specialised coding skills (Implement Consulting Group, 2024).

Strengths and safeguards. Generative AI can raise individual and team productivity, but effective use requires attention to data protection, bias, and human oversight. In regulated settings, most use remains supervised, with governance covering usage rules, ethics and risk management (BCL and CSSF, 2025).

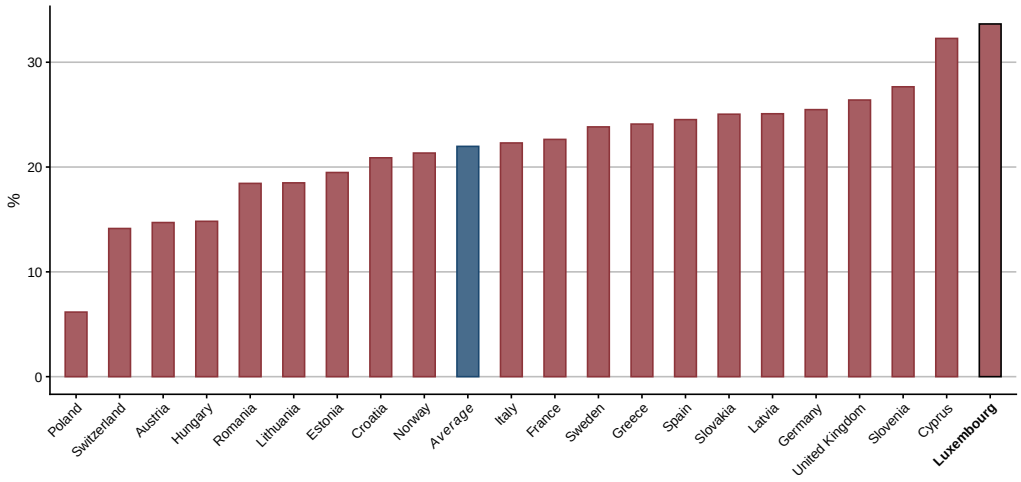
Entrepreneurs in Luxembourg are optimistic about AI's positive impacts on their businesses. Luxembourg's entrepreneurs are among the most optimistic in Europe concerning AI effects. They are the most optimistic regarding expected gains in efficiency and enhanced customer personalisation from AI. At the same time, **Luxembourg's entrepreneurs report higher-than-average concerns about AI-related risks**compared to their European counterparts. Luxembourg's entrepreneurs are particularly negative about data protection and privacy, as well as about the costs and challenges of implementation. Concerns about employee resistance are also relatively high.

Overall, these results are consistent with the emphasis that both policymakers and economic studies place on trust, skills, and data governance for AI (Digital Luxembourg, 2019; BCL and CSSF, 2025; Filippucci et al., 2024).

7.1 Early-stage entrepreneurs and the importance of Generative AI

Figure 7.1 reports the share of TEA entrepreneurs who rate **AI as "very important" for implementing their business model and strategy.** In 2024, Luxembourg ranks first among European countries: 34% of its early-stage entrepreneurs rate AI as very important, well above the European mean of 22%. The only countries close to Luxembourg are Cyprus at 32%, followed by Slovenia at 28%, the United Kingdom at 26% and Germany at 25% (Figure 7.1). The lower tail includes Austria at 15%, Switzerland at 14% and Poland at 6%, highlighting a wide cross-country dispersion in entrepreneurs' assessments of AI's strategic importance. France stands at 23%, close to the European mean, while Spain is at 25% and Sweden at 24%. That Luxembourg outperforms larger neighbours and innovation leaders evidences early-stage entrepreneurs' particularly strong view that AI tools are central to business model execution.

Figure 7.1: Artificial Intelligence is very important for business model and strategy.

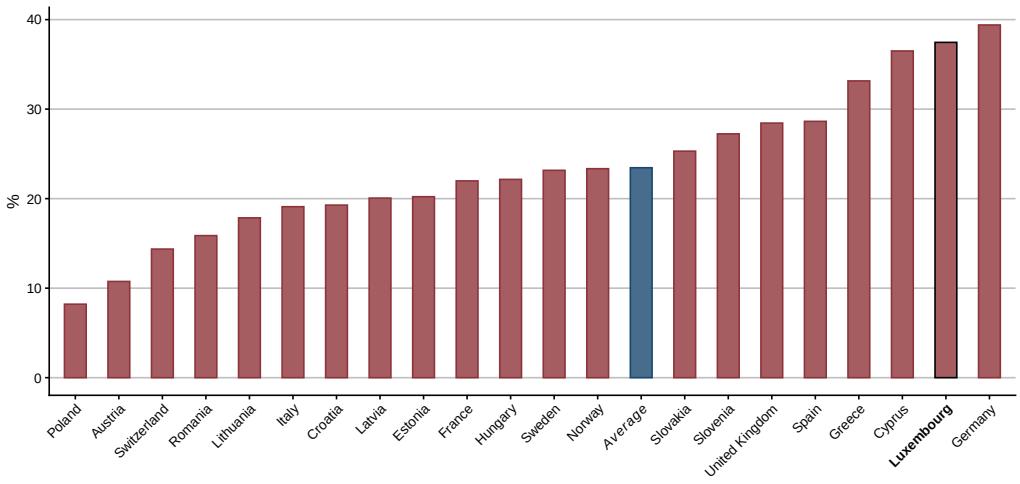


Shares of TEA entrepreneurs rating "Artificial Intelligence" as "very important" for implementing business model and strategy (in %).
Source: 2024 GEM Global APS data.

Figure 7.2 reports on **how important AI is anticipated to be for implementing the business model and strategy in the next three years**. Luxembourg ranks second in Europe at 37%, just behind Germany at 39%. Both are far above the European mean of 23%. Top tier includes Cyprus at 36%, Greece at 33%, Spain at 29% and the United Kingdom at 28%, while the lower end features Switzerland at 14%, Austria at 11% and Poland at 8%. For Luxembourg, the share of TEA perceiving high importance of AI in the next 3 years (37%) exceeds the contemporaneous assessment (34%). This difference suggests that early-stage entrepreneurs expect the role of AI

to intensify over the short horizon. This is consistent with diffusion dynamics typical of general-purpose technologies.

Figure 7.2: Artificial intelligence very important for the business model 3 years from now.



Shares of TEA entrepreneurs anticipating AI will be "very important" for implementing their business model and strategy in the next three years (in %).
Source: 2024 GEM Global APS data.

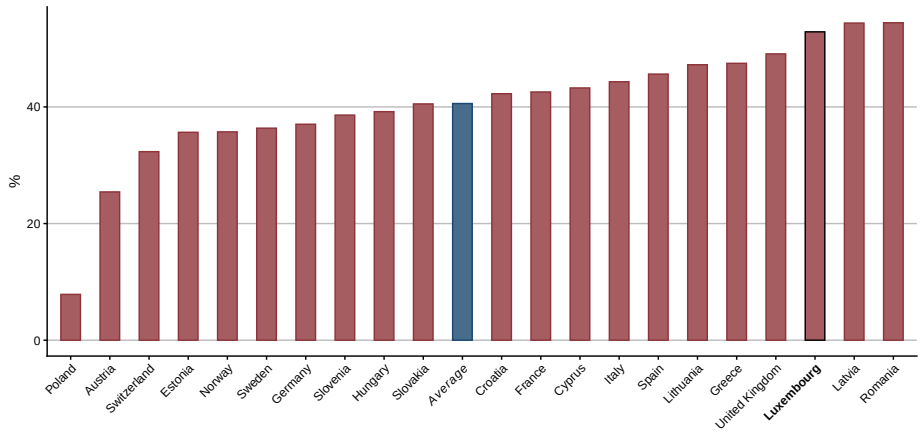
7.2 Perceived Benefits from Generative AI among TEA entrepreneurs

Figure 7.3 provides an overview of entrepreneurs' **perceptions of the positive impacts of AI**. It shows the average across five indicators (*composite indicator*), measured as the country-level mean share of TEA entrepreneurs who rate each impact as "very important." In 2024, Luxembourg's composite stands at 53%, placing it third among 21 European countries covered and well above the European mean of 41%. Only Romania (54%) and Latvia (54%) score higher. By contrast, several countries fall well below this benchmark, notably Austria at 25% and Poland at 8%. This position suggests a broad-based optimism among early-stage entrepreneurs in Luxembourg about AI's potential to improve their businesses across multiple dimensions, as shown by Figure 7.3.

The radar chart in Figure 7.4 provides a more detailed view of the positive dimensions of AI adoption, illustrating how Luxembourg performs across the five indicators that constitute the *composite indicator*. Luxembourg consistently scores above the European average and, in some dimensions, reaches the highest value among the countries considered.

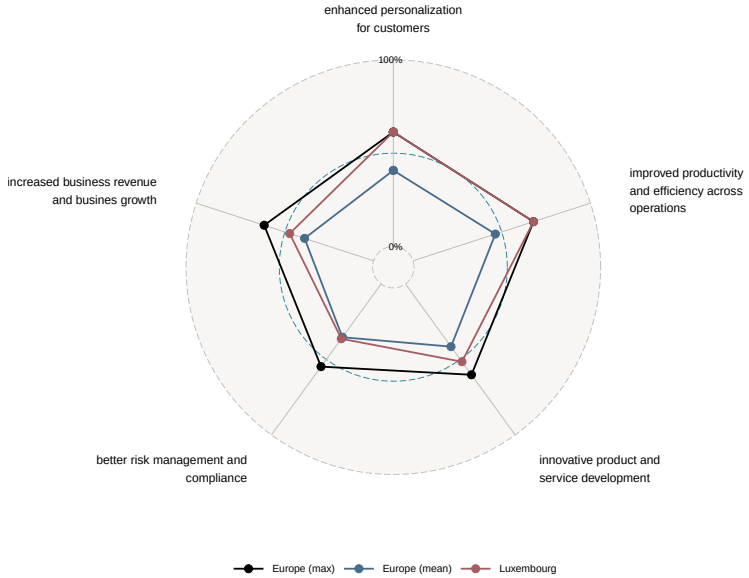
The following figures instead present a more detailed comparison of the **cross-country rankings for each of the five dimensions**, showing Luxembourg's precise position relative to other European economies.

Figure 7.3: Average positive impact of AI.



Country-specific averages of the share of TEA entrepreneurs anticipating a high positive impact of AI, across five dimensions (in %).
Source: Authors' computations based on 2024 GEM Global APS data.

Figure 7.4: Expected positive impact of AI across five dimensions.

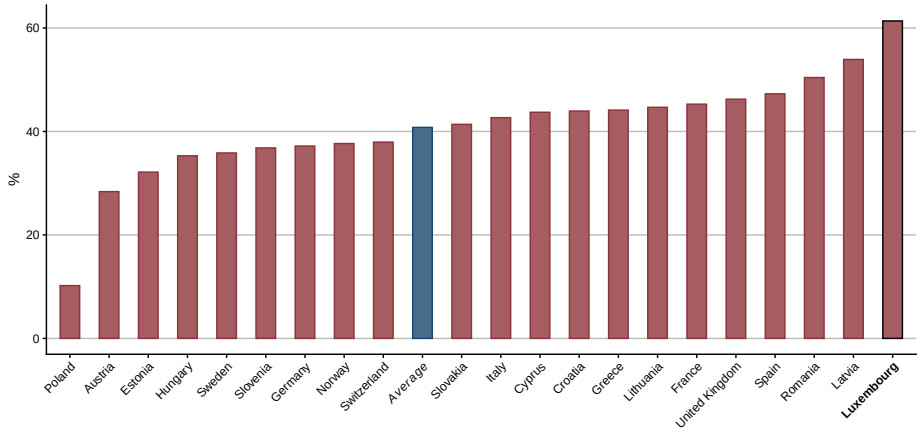


Radar plot illustrating how Luxembourg compares with the European average and maximum values in terms of the shares of TEA entrepreneurs expecting a high positive impact of AI across five dimensions (in %).
Source: 2024 GEM Global APS data.

Among the five specific benefits considered, **enhanced personalization for customers** is where TEA entrepreneurs in Luxembourg express the strongest expectation. Figure 7.5 shows that in 2024, 61% of Luxembourg's TEA entrepreneurs report that personalized customer experiences from AI would have a high positive impact on their business — the highest proportion across Europe. This exceeds the European mean of 41% by roughly 20 percentage points. The next best performers are Latvia

(54%) and Romania (50%), while major economies such as Germany (37%) and France (45%) trail Luxembourg by a sizable margin. This pattern indicates that Luxembourg's early-stage entrepreneurs see AI as a differentiator in tailoring products and services to client needs, potentially reflecting the country's service-intensive entrepreneurial landscape and its cross-border customer base.

Figure 7.5: Enhanced personalization for customers as an AI positive impact.

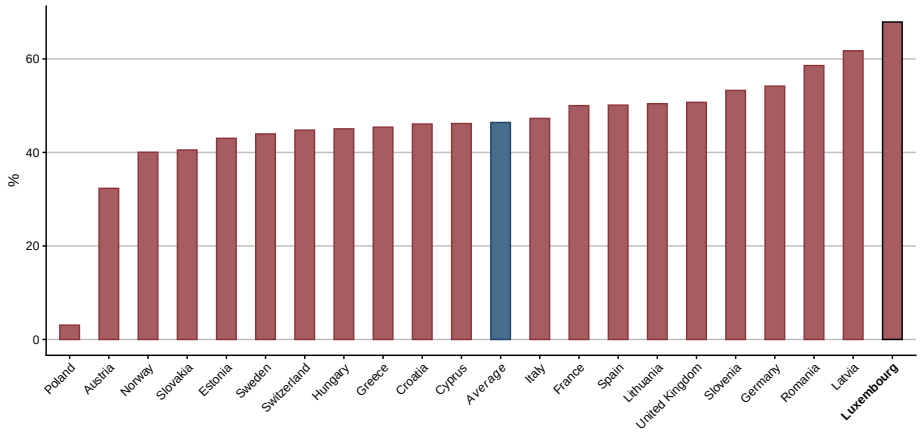


Shares of TEA entrepreneurs expecting a "high" positive impact from "enhanced personalization for customers" when introducing AI (in %).
Source: 2024 GEM Global APS data.

Figure 7.6 documents that **improved productivity and operational efficiency** is another most widely anticipated benefit of AI in Luxembourg's TEA community. Fully 68% of TEA entrepreneurs in Luxembourg expect a high positive impact here, the top score among all countries and over 21 percentage points above the European mean of 46%. The next best performers are Latvia (62%), Romania (59%), and Germany (54%). The distribution exhibits considerable heterogeneity across Europe, with some countries — most notably Poland at 3.1% — reporting vastly lower expectations. For Luxembourg, this variable records the highest of all five positive impact dimensions, underscoring a prevailing view that AI will be integrated first and foremost as a performance and efficiency lever in early-stage ventures.

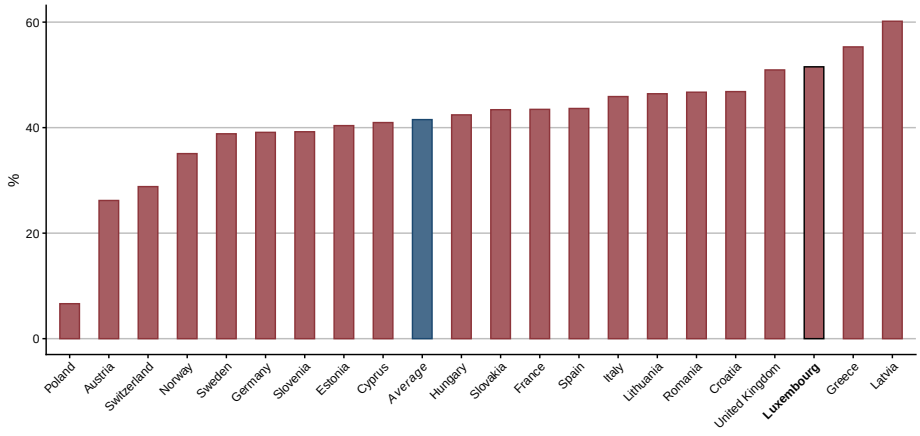
Figure 7.7 illustrates that expectations around **AI-driven product and service innovation** are also high in Luxembourg. In 2024, 51% of Luxembourg's TEA entrepreneurs rate the innovation impact as high, ranking the country third in Europe, behind Latvia (60%) and Greece (55%), and above the European mean of 41%. Luxembourg sits just ahead of the United Kingdom (51%) and well above Germany (39%). This indicates that early-stage ventures in Luxembourg anticipate AI to be more than a back-office tool: it is expected to enable new offerings and augment value propositions, a trend consistent with Luxembourg's emphasis on knowledge-intensive services.

Figure 7.6: Improved productivity and efficiency across operations as an AI positive impact.



Shares of TEA entrepreneurs expecting a "high" positive impact from "improved productivity and efficiency across operations" when introducing AI (in %).
Source: 2024 GEM Global APS data.

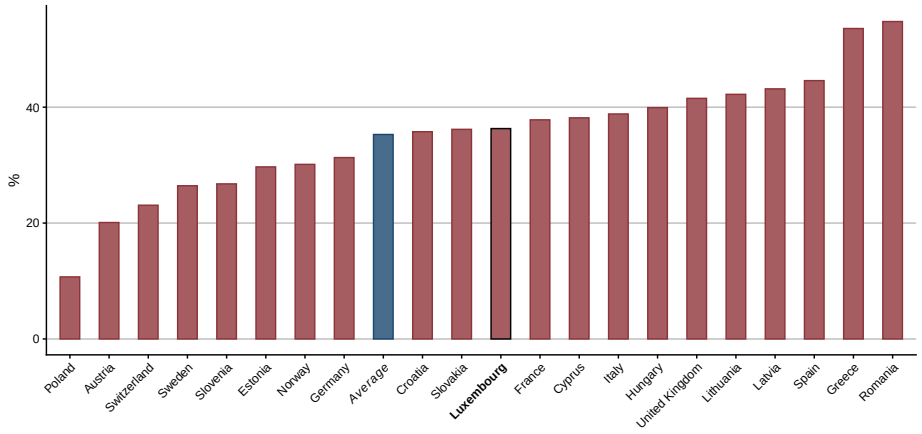
Figure 7.7: Innovative product and service development as an AI positive impact.



Shares of TEA entrepreneurs expecting a "high" positive impact from "innovative product and service development" when introducing AI (in %).
Source: 2024 GEM Global APS data.

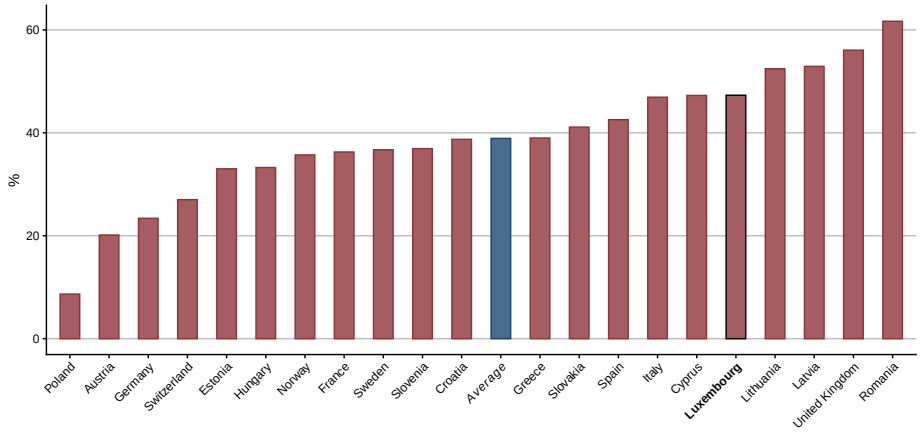
Perceptions diverge when it comes to **risk management and compliance.** In 2024, 36.3% of TEA entrepreneurs in Luxembourg expect a high positive impact in this area, a figure close to the European mean of 35%, but Luxembourg's relative rank is lower (11th). Countries such as Romania (55%) and Greece (54%) report far higher levels of optimism about AI's contribution to risk and compliance. Germany registers a lower figure (31%), while France is near the middle (38%). The result suggests that early-stage entrepreneurs in Luxembourg are less likely to anchor their AI business case primarily on regulatory and risk processes.

Figure 7.8: Better risk management and compliance as an AI positive impact.



Shares of TEA entrepreneurs expecting a "high" positive impact from "better risk management and compliance" when introducing AI (in %).
Source: 2024 GEM Global APS data.

Figure 7.9: Increased business revenue and business growth as an AI positive impact.



Shares of TEA entrepreneurs expecting a "high" positive impact from "increased business revenue and business growth" when introducing AI (in %).
Source: 2024 GEM Global APS data.

Expectations regarding **increased revenue and growth** gains are comparatively strong in Luxembourg, though not at the very top, as shown in Figure 7.9. In 2024, 47% of TEA entrepreneurs in Luxembourg anticipate a high positive impact of AI on business revenue and growth. This places Luxembourg fifth in the European ranking,

behind Romania (62%), the United Kingdom (56%), Latvia (53%), and Lithuania (52%). The European mean stands at 39%, and Luxembourg's figure is well above this benchmark. By comparison, Germany reports 23% on this measure. On balance, these results suggest that Luxembourg's early-stage entrepreneurs expect AI to translate into tangible commercial outcomes, though they see operational efficiency and personalization as even more immediate levers.

Luxembourg's strong expectations on efficiency and personalization are consistent with the evidence from other sources. Micro studies find large GenAI task-level gains — about 14% in customer service, nearly 40% in consulting, and over 50% in coding, with a central tendency near 30% — and macro scenarios point to 0.4–0.9 percentage points higher annual labour productivity over a decade (Filippucci et al., 2024). Locally, early adopters often record 2–3 percentage point annual labour productivity increases, and GenAI is assessed to bring forward the automation frontier by nearly a decade (Implement Consulting Group, 2024). Business sentiment aligns: 59% of firms plan to invest in AI-based automation, 58% expect significant GenAI-driven productivity gains within five years, and 75% of workers believe GenAI will raise their productivity (Implement Consulting Group, 2024). These patterns match TEA entrepreneurs' focus on operational efficiency and customer value.

The personalization emphasis echoes national strategies that prioritize user-centric, predictive services in mobility, health and finance, where AI enables tailored experiences and proactive service delivery (Digital Luxembourg, 2019; Grotz et al., 2019). From an organizational perspective, AI reduces monitoring and coordination costs, supporting greater delegation and flatter structures — conditions conducive to personalization at scale in service-intensive ventures (Aghion et al., 2019).

More tempered expectations on risk/compliance are plausible given implementation realities. In finance, governance frameworks are advancing, yet entities often lack dedicated Gen-AI policies and report challenges in monitoring GenAI model performance — indicators of the complexity of turning AI into robust risk functions, especially for small and nascent ventures likely to prioritize near-term operational and commercial gains (BCL and CSSF, 2025).

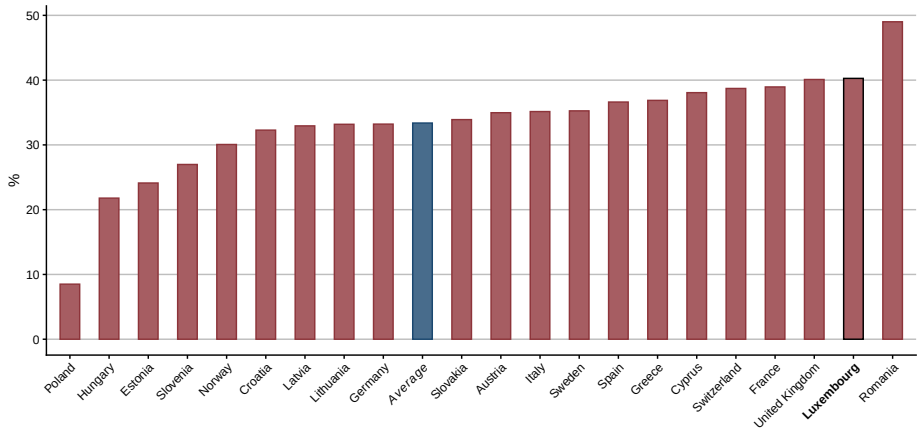
Finally, the share of TEA entrepreneurs in Luxembourg anticipating a high AI-driven impact on revenue and growth is sizeable but lower than for efficiency or personalization: 47% (ranked fifth in Europe and above the European mean of 39%). This pattern is consistent with the role of complementary assets (skills, data readiness, market access) and with macroeconomic dynamics: input–output linkages can amplify sectoral gains, while uneven improvements and frictions can induce Baumol-type drags that temper aggregate outcomes (Aghion et al., 2019;

Filippucci et al., 2024). This implies phased commercial uplift as adoption deepens and capabilities mature (Implement Consulting Group, 2024).

7.3 Perceived risks from Generative AI among TEA entrepreneurs

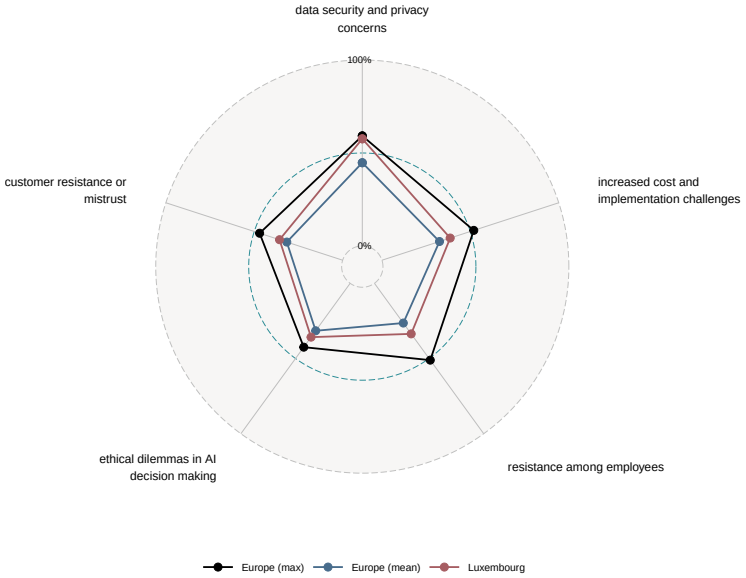
This section uses **the average of the five "high-impact" negative perceptions** — data security and privacy, increased costs and implementation challenges, resistance among employees, ethical dilemmas in AI decision-making, and customer resistance or mistrust — to summarize how early-stage entrepreneurs expect AI to affect their business. As discussed above the *composite indicator* is constructed as the mean of the five corresponding country-level proportions. In 2024, Luxembourg's average stands at 40%, the second-highest among the 21 European countries covered, just below Romania (49%). The European mean is 33%, with Germany at 33%, Estonia at 24%, Hungary at 22% and Poland at 8%. Figure 7.10 displays these cross-country differences. Luxembourg's position close to the top of the distribution indicates that its TEA entrepreneurs, on average, anticipate higher downside risks from AI than their European peers. At the same time, the European dispersion is large, reflecting heterogeneous national contexts and risk perceptions. As shown by Figure 7.10, Luxembourg's average outpaces the European mean by roughly 7 percentage points. Although the radar chart in Figure 7.11 does not provide an exact ranking of Luxembourg relative to other countries, it summarizes Luxembourg's position while retaining dimension- and impact-specific detail by representing five dimensions in a single visualization rather than collapsing them into a single index, thus avoiding information loss.

Figure 7.10: Average of the AI negative impact



Country-specific averages of the share of TEA entrepreneurs anticipating a high negative impact of AI, across five dimensions. (in %).
Source: Authors' computations based on 2024 GEM Global APS data.

Figure 7.11: Expected negative impact of AI across five dimensions.



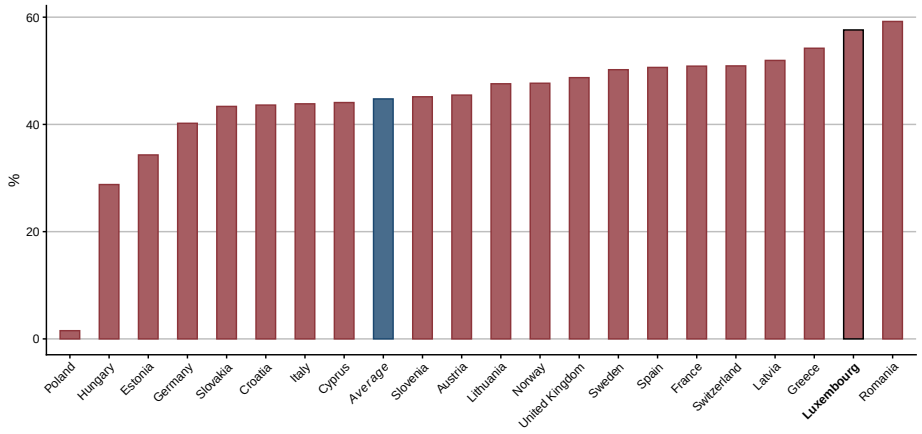
Radar plot illustrating how Luxembourg compares with the European average and maximum values in terms of the shares of TEA entrepreneurs expecting a high negative impact of AI across five dimensions (in %).
Source: 2024 GEM Global APS data.

Figure 7.11 conveys a message similar to that of Figure 7.10: Luxembourg is consistently above the European mean. For "data security and privacy concerns," Luxembourg is even close to the highest value among the European countries considered.

Among the five potential negatives, **concerns related to data security and privacy standout** most in Luxembourg. Figure 7.12 documents the share of TEA entrepreneurs expecting a high impact from data security and privacy issues reaches 58%, ranking Luxembourg second after Romania (59%), and well above the European mean of 45%. Several larger economies cluster below Luxembourg: France records 51%, Spain 51%, the United Kingdom 49% and Germany 40%. At the lower end, Estonia stands at 34%, Hungary at 29% and Poland at 2%. Figure 7.12 makes this pattern clear. A possible explanation is that early-stage entrepreneurs in Luxembourg, operating in a jurisdiction with stringent data protection and a financial-center profile, anticipate meaningful compliance and privacy challenges when integrating AI.

Increased cost and implementation concerns are also high in Luxembourg, where 39% of TEA entrepreneurs foresee a high impact from increased costs or implementation difficulties, placing the country fourth after Romania (52%), Greece (45%) and the United Kingdom (41%). This compares with a European mean of 33%. In the same distribution, France is at 35%, Germany 34% and Austria 33%, while Estonia (19%), Slovenia (16%) and Poland (9%) are lowest. Figure 7.13 illustrates this gradient. The gap vis-à-vis the European mean — around 6 percentage points —

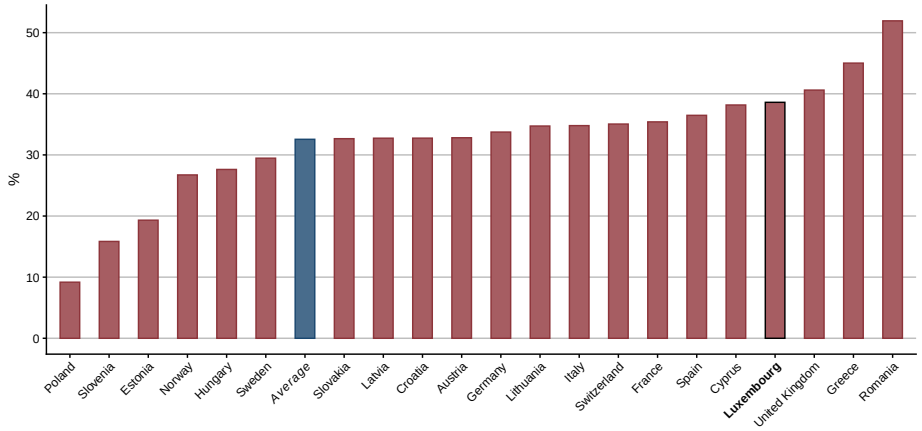
Figure 7.12: Data security and privacy concerns as an AI negative impact.



Shares of TEA entrepreneurs expecting a "high" negative impact from "data security and privacy concerns" when introducing AI (in %).
Source: 2024 GEM Global APS data.

indicates that Luxembourg's TEA entrepreneurs expect above-average budgeting and integration challenges when adopting AI. As seen in Figure 7.13, a cluster of Western and Northern European economies exhibit mid-30s shares, while Luxembourg sits in the upper tier, aligning with countries that currently report greater anticipated resource commitments to reach effective AI implementation at scale.

Figure 7.13: Increased cost and implementation challenges as an AI negative impact.

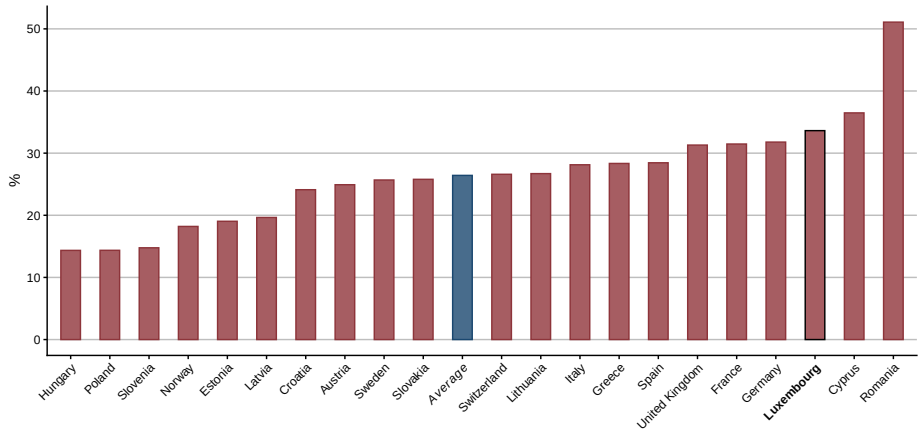


Shares of TEA entrepreneurs expecting a "high" negative impact from "increased cost and implementation challenges" when introducing AI (in %).
Source: 2024 GEM Global APS data.

Employee resistance to AI introduction is another area where Luxembourg's TEA entrepreneurs report relatively high concern. The share expecting a high impact from internal resistance is 33.62%, ranking third, behind Romania (51%) and Cyprus (36%). This is above the European mean of 26%. Comparable economies register lower levels: Germany at 32%, France 31%, Sweden 26% and Norway 18%. Figure 7.14 depicts these differences. The Luxembourg result points to anticipated

change-management challenges during AI adoption. Relative to the European benchmark, concerns about acceptance and adjustment among staff appear more pronounced, as highlighted by Figure 7.14, which shows Luxembourg in the top three.

Figure 7.14: Resistance among employees as an AI negative impact.

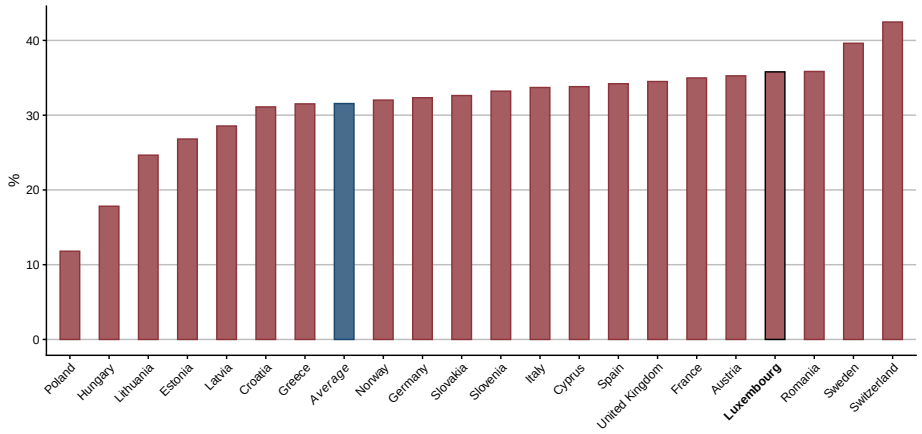


Shares of TEA entrepreneurs expecting a "high" negative impact from "resistance among employees" when introducing AI (in %).
Source: 2024 GEM Global APS data.

A share of 36% of Luxembourg's TEA entrepreneurs expects a high **impact from ethical dilemmas in AI decision-making**, placing the country fourth after Switzerland (42%), Sweden (40%) and Romania (36). The corresponding European mean is 32%. Neighbouring or comparable markets report similar orders of magnitude: France stands at 35% and Germany at 32%. Figure 7.15 shows this distribution. The Luxembourg figure is modestly above the European average — by a little over 4 percentage points — and broadly comparable in distance to the mean as the "customer resistance or mistrust" dimension (see next section). In other words, ethical concerns sit in the upper range but do not stand out as strongly as data/privacy or implementation risks nationally.

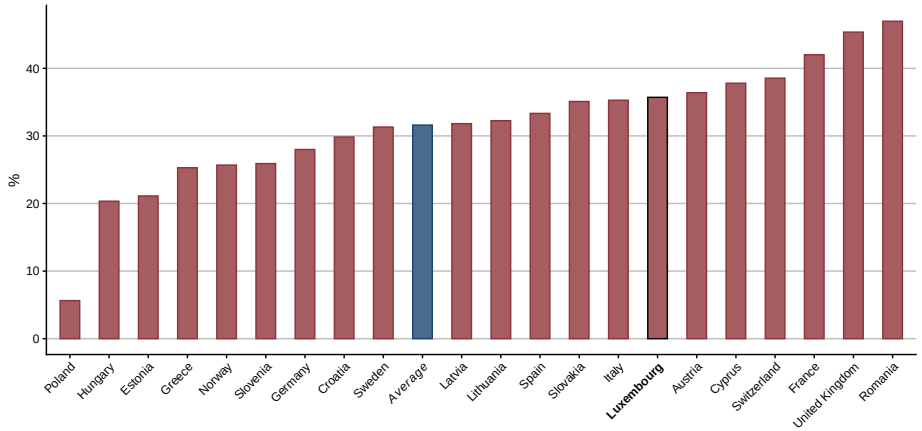
Customer resistance or mistrust of AI appears somewhat less acute than other domains but remains above the European average. In Luxembourg, 36% of TEA entrepreneurs anticipate a high impact from customer resistance or mistrust, ranking seventh, compared with a European mean of 32%. Higher figures are observed in Romania (47%), the United Kingdom (45%) and France (42%); Germany is lower at 28%, and Poland is a clear outlier at 6%. Figure 7.16 captures these cross-country contrasts. As shown in Figure 7.16, Luxembourg sits modestly above the European average on this dimension. While entrepreneurs expect some friction in customer adoption, this concern is not as dominant as data/privacy or implementation risks, which rank higher nationally.

Figure 7.15: Ethical dilemmas in AI decision making as an AI negative impact.



Shares of TEA entrepreneurs expecting a "high" negative impact from "ethical dilemmas in AI decision-making" when introducing AI (in %).
Source: 2024 GEM Global APS data.

Figure 7.16: Customer resistance or mistrust as an AI negative impact.



Shares of TEA entrepreneurs expecting a "high" negative impact from "customer resistance or mistrust" when introducing AI (in %).
Source: 2024 GEM Global APS data.

8

Cross-borders entrepreneurship in Luxembourg

In 2024, in cooperation with the House of Entrepreneurship and the Luxembourg's Chamber of Commerce, we conducted a pilot study to explore entrepreneurship across-the-borders in Luxembourg. This chapter illustrates the rationale behind the study, and its implementation, and presents first findings from this exploratory exercise. The findings need to be interpreted cautiously, due to features of the sample and the small number of available observations. Nonetheless, this pilot constitutes the first attempt to fill a knowledge gap in the GEM survey for Luxembourg: the surveys are administered on samples of the resident population and, as a result, they neglect non-residents' entrepreneurial activities, or, **cross-border entrepreneurship**.

This pilot study provides new statistical information on cross-border entrepreneurship for Luxembourg. **Overall, the findings suggest that features of non-residents entrepreneurs , and their experience of the Luxembourg's entrepreneurial environment, are well aligned with those of entrepreneurs residing in Luxembourg.** Networks, attitudes and perceptions of cross-border entrepreneurs are similar to those of residents entrepreneurs. Cross-borders feel that they have skills, knowledge and experience for entrepreneurship , and report an optimistic view of business opportunities in Luxembourg. **Overall, entrepreneurs display a more optimistic view of the Luxembourg's business environment, lower fear of failure, and more confidence in their entrepreneurial capabilities than the general population.** Views across groups are more aligned when it comes to evaluate the easiness of starting a business in the country, albeit cross-borders are slightly more optimistic than residents. **Cross-borders and residents entrepreneurs share similar concerns about barriers to entrepreneurship, indicating in the availability of affordable office space and access to funding the main obstacles to their entrepreneurial efforts.** Cross-borders are less preoccupied with the availability of qualified and affordable human resources than residents, and seem to experience office space and funding barriers with somewhat higher intensity than residents.

Cross-border entrepreneurship refers to individuals who reside in one country but intend to start or operate a business in another. Cross-border entrepreneurship exists across Europe, and is especially relevant for border regions and small open economies such as Luxembourg, a country that relies on a large number of cross-border workforce.

It is well-known that about half of the workforce in Luxembourg consists of cross-border workers, who commute daily to Luxembourg (STATEC, 2025b). It is plausible that this labour market feature is, at least partially, reflected in entrepreneurial endeavours. As an indication, in November 2022, approximately 20% of the self-employed workforce in the country were cross-border workers — 5 966 out of 29 383

individuals (EU Commision, 2023).[1] Across the EU and EFTA countries, around 1.8 million cross-border workers were active in 2022 (European Commission, 2024). Border regions such as Saar-Lor-Lux (the “Grande Région”), the Upper Rhine, and the Meuse-Rhine Euroregion represent some of the most integrated labour markets in Europe. These regions offer unique opportunities for entrepreneurship, but they also pose challenges related to regulation, coordination, and accessibility.

Recent developments have highlighted the challenges faced by cross-border regions. Indeed, increased restrictions to movements in the Schengen area have disrupted previously smooth cross-border flows, one example being border controls reinstated between Germany and Luxembourg. What is more, differences in countries’ fiscal and social security regimes add legal and administrative complexity.[2] In the face of these and additional hurdles, the Draghi report calls for increasing integration and proposes a "28th Regime" for innovative start-ups and SMEs. One of the objectives of the 28th Regime is to "boost SMEs cross-border growth".[3]

Despite its relevance, analysis and academic studiesof cross-border entrepreneurship in the EU remain relatively limited, with few longitudinal or comparative studies to date (Afandi and Yaacob, 2021). Smallbone and Welter (2012) shows that cross-border entrepreneurship is shaped by both opportunity and institutional context. A case study by Stverkova et al. (2018) on the Czech–Polish Euroregion Beskydy highlights the role of administrative, cultural, and linguistic barriers and calls for coordinated regional support to unlock entrepreneurial potential.[4]

8.1 Pilot setup

The pilot survey was conducted in the second quarter of 2024, at the same time as the standard GEM Adult Population Survey (APS).

The pilot’s goal was to collect data from a "*purposive sample*" rather than a sample representative of the population. (Broadly speaking, purposive sampling refers to a way of collecting data through an ad-hoc sample formed to gather information on a specific aspect of interest.) The survey targeted individuals residing in Luxembourg’s neighbouring countries who were either engaged in or considering starting

[1] Self-employment is often used as a proxy for entrepreneurship in studies, when data on entrepreneurs are not available, although not all self-employment is regarded as entrepreneurial.

[2] These differences were exposed when working-from-home arrangements had to be quickly set-up during the pandemic. See European Commission: Cross-border teleworking agreements `https://ec.europa.eu/social/main.jsp?catId=850&langId=en`

[3] One can see the EU Parliament’s workshop `https://www.europarl.europa.eu/committees/en/the-28th-regime-a-new-legal-framework-fo/product-details/20250603WKS06401`.

[4] One can also see the Interdisciplinary Center of Expertise of the University of the Greater Region (UniGR) : `https://cbs.uni-gr.eu/en`

a business in Luxembourg. It was distributed to an e-mailing list provided by the House of Entrepreneurship and the Chamber of Commerce, and administered online. Participation to the study was also promoted in relevant social media groups (e.g. "Friends of BeNeLux"), and during information events organised for prospective entrepreneurs. Respondents were administered the standard GEM APS questionnaire, slightly modified to record the country of residence of the respondent and the location of the business. This allowed us to distinguish between domestic and cross-border entrepreneurship.[5]

Despite considerable effort, only 95 individuals completed the survey, out of whom 32 were non-residents living in neighbouring countries. What follows presents reuslts from the analysis of the completed questionnaires. The small sample size limits considerably the interpretation of results illustrated in the remaining of this chapter. **Results should be regarded as illustrative and should not be interpreted as representative of the cross-border population.**

8.2 Results

What follows is a summary of key findings from the pilot study. We focus on the answers provided by residents of neighbouring countries (hereafter referred to as 'cross-borders'), and compare them to those of residents entrepreneurs participating in the pilot and of the general population from the GEM's APS.[6]

The share of early-stage entrepreneurs (TEA) accounts for 70% of respondents. This is expected given the targeted nature of the study. As for socio-demographics, 56% of respondents are female; 69% between 35 and 54 years of age; 94% have at least tertiary education (Bachelor's degree or higher).

We start by examining the cross-border entrepreneurs network, attitudes, and perception of the business environment. As described in Section 3.2 (Chapter 3), GEM collects information on entrepreneurs' attributes through answers to the following question and statements:

1. **Personally Know Entrepreneurs:** How many people do you know who have started a business in the past two years?

[5]The relevant questions were: "In which country are you resident ? – Luxembourg, Germany, Belgium, France, Others" and "In which country is this business located? – Luxembourg, Germany, Belgium, France, Other."

[6]Cross-borders are identified as those respondents that declare they are starting/running with a business located in Luxembourg, to ensure a direct understanding of local entrepreneurial conditions.

2. **Good Opportunities:** In the next six months, there will be good opportunities to start a business in Luxembourg.
3. **Easy to Start a Business:** It is easy to start a business in Luxembourg.
4. **Personally Have the Skills:** You have the knowledge, skills, and experience required to start a new business.
5. **Fear of Failure:** You would not start a business for fear it might fail.

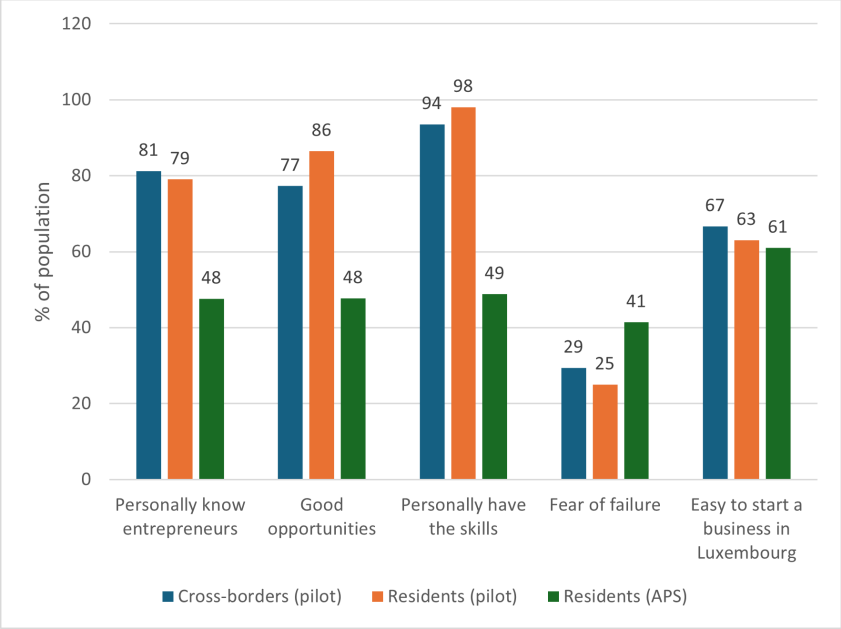
Figure 8.1 compares the answers of cross-borders' (blue bars) to those of residents participating in the pilot (orange bars) and general APS respondents (green bars). Recall that, with the exception of the first question, answers are provided on a 1 to 5 Likert scale, and that figures in the charts represent the shares of respondents that indicate "agree" or "strongly agree" with the statement. We observe that 81% of non-residents report knowing at least one entrepreneur (compared to 48% of APS respondents); 94% feel they have the necessary knowledge, skills and experience to start a business (49%); 77% see good opportunities to start a business in Luxembourg (48%); among the latter, only 29% report fear of failure as a barrier (41%); 67% of non-residents agree or strongly agree that it is easy to start a business in Luxembourg (61%).

Overall, the answers of the cross-borders and residents participating in the pilot are well aligned. Cross-borders entrepreneurs tend to report more frequently that they know entrepreneurs, and that it is easy to start a business in Luxembourg than residents entrepreneurs . They are less optimistic that residents (we see nearly 10 point difference between the groups in the perception of good business opportunities), they report slightly higher fear of failure, and tend to be slightly less confident in their capabilities.[7] In contrast, we observe a considerable difference in the answers provided by APS respondents and pilot's respondents. This is plausibly due to the purposive nature of the sample. Results suggest that entrepreneurs have a more favourable view of Luxembourg's business environment than non- or potential entrepreneurs , they have lower fear of failure, they know other entrepreneurs , and they perceive they have knowledge and skills for engaging in entrepreneurship. There is greater alignment in the evaluation of the statement "It is easy to start a business in Luxembourg".

In summary, cross-borders feel that they have skills, knowledge and experience for entrepreneurship , and have an optimistic view of business opportunities in Luxembourg. The views of cross-borders and residents entrepreneurs participating in the pilot study are generally well aligned. Overall, entrepreneurs display a more optimistic view of the Luxembourg's business environment, lower fear of failure, and more confidence in their entrepreneurial capabilities than the general population.

[7]The correlation of the pilot's cross-borders and residents' answers is 0.986. It lowers to 0.341 when comparing cross-borders with residents surveyed in the regular APS.

Figure 8.1: Luxembourg's entrepreneurial environment according to cross-borders.



Note: Shares of cross-borders (blue bars), pilot's residents (orange bars) and APS respondents (green bars) that agree or strongly agree with the statement (%). Break in the series in 2019.
Source: Pilot study.

Next, we examine the comparative views of *cross-borders early-stage (TEA) entrepreneurs* on barriers to entrepreneurship in Luxembourg. As for the APS, pilot's respondents who are entrepreneurs are asked to express their agreement with the following statements:[8]

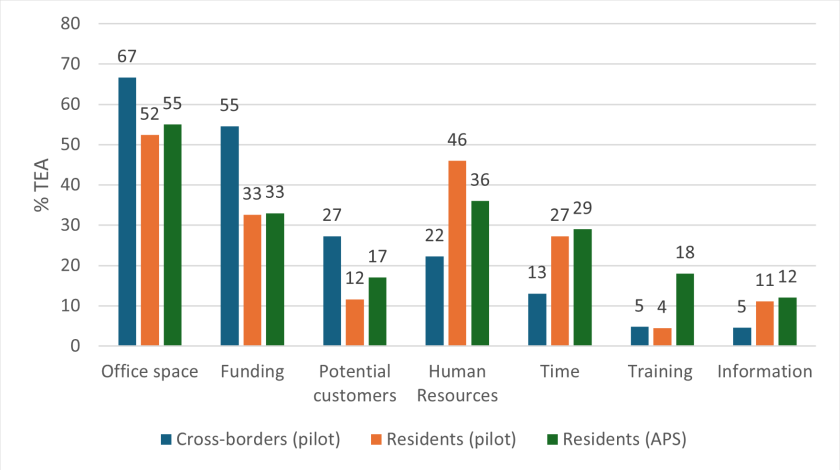
1. I can easily access funding for launching and running my company.
2. I have time to launch a new company.
3. I can easily access needed information to start my company.
4. Dedicated training programs to start a new company are available and adequate.
5. I can easily access potential customers.
6. I can easily access office spaces that are affordable.
7. Qualified and affordable human resources, needed for launching and running a new company, are available.

Figure 8.2 presents the shares of TEA cross-border entrepreneurs (blue bars), residents TEA entrepreneurs participating in the pilot (orange bars), and APS TEA entrepreneurs (green bars), who *disagree* or *strongly disagree* with the statements above. (Higher percentages indicate a more negative evaluations of each factor.)

[8]Answers are recorded on a 5-point Likert scale ranging from 1 (completely agree) to 5 (completely disagree). The answers reported refer to TEA entrepreneurs only.

Once again, there is general alignment across the groups of TEA entrepreneurs and across samples on the relative importance attached to the various barriers. The answers of pilot respondents and APS respondents are more closely aligned this time, suggesting that the pilot does a good job in capturing TEA entrepreneurs. We observe, however, a possible discrepancy in the "intensity" of the barriers' perceptions.[9] For example, 66% of cross-border TEA respondents disagree with the statement that they can easily find affordable office space. This compares with the 52% and 55% reported, respectively, by the resident entrepreneurs participating in the pilot, and in the general survey.**The main concern of cross-border entrepreneurs is access to affordable office space. The second most frequently cited barrier is access to funding: 56% of cross-border respondents see this as a challenge, compared to 33% of resident entrepreneurs. Interestingly, the availability of human resources is a concern for 46% of residents entrepreneurs , and only for 22% of the cross-border group.** 4% of cross-border respondents report major difficulties in accessing training or relevant information—suggesting that, at least for this group, information and training are not seen as major bottlenecks.[10]

Figure 8.2: Barriers to entrepreneurship according to cross-borders.



Note: share of cross-borders TEA entrepreneurs (blue bars), pilot's resident TEA (orange bars), APS TEA (green bars) that disagree or strongly disagree with the statement (%): TEA pilot .
Source: Pilot study.

[9]The correlation between perceived barriers reported by cross-border TEA entrepreneurs and those reported by resident TEA entrepreneurs is relatively high. When using resident data from the pilot study, the correlation is 0.716. It rises to 0.809 when comparing cross-border TEA entrepreneurs with residents TEAs in the APS. The highest correlation, at 0.935 is for resident TEA in the pilot and APS.
[10]When we expand the analysis to include owners of any business (not just TEA) we obtain a slightly more numerous sample, but results are unchanged.

9

Entrepreneurial framework conditions: the NES survey

The GEM research project places emphasis on the social, cultural and economic context — the entrepreneurial "ecosystem" — that shapes and fosters entrepreneurship. This section provides a comparative assessment of Luxembourg's entrepreneurial ecosystem based on the experts' views collected through the National Expert Survey(NES). [1]

The NES assesses national contexts using the " Entrepreneurship Framework Conditions" (EFCs), that is, factors that are known to favour a thriving entrepreneurship. EFCs refer to business opportunities, entrepreneurial policies, infrastructure and norms. Table 9.1 describes in detail the framework conditions. Each year, the NES collects the views from at least 36 national experts per country. Each expert compiles a questionnaire that includes an assessment of the extent to which the statements about the EFCs are - on an 11-point Likert scale - completely untrue (0) to completely true (11). Then, the assessments are pooled and converted into an overall score for each EFC at the country level. This provides 13 overall scores evaluating the sufficiency of each framework condition for a given country, with a score of five representing "just sufficient". As the qualitative assessments are themselves context-dependent, however, cross-country comparisons of NES results should be interpreted cautiously. (In other words, national experts may have different views of sufficiency in various countries.)

Table 9.1: GEM's entrepreneurship context: Entrepreneurial Framework Conditions

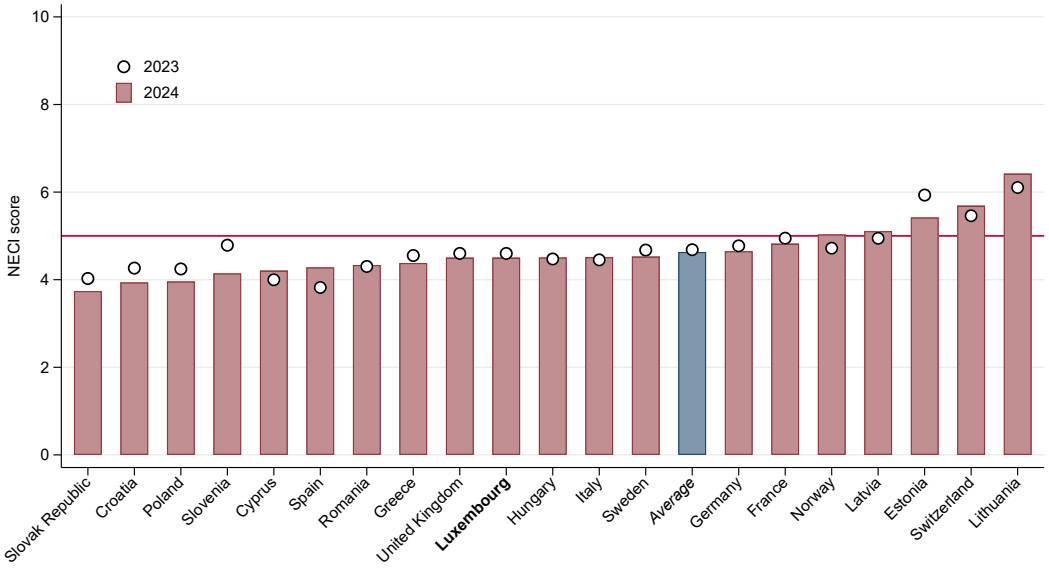
A1	**Entrepreneurial Finance**: there are sufficient funds for new start-ups
A2	**Ease of Access to Entrepreneurial Finance**: and those funds are easy to access
B1	**Government Policy — Support and Relevance**: policies promote and support start-ups
B2	**Government Policy — Taxes and Bureaucracy**: new businesses are not over-burdened
C	**Government Entrepreneurial Programs**: quality support programs are widely available
D1	**Entrepreneurial Education at School**: schools introduce entrepreneurial ideas
D2	**Entrepreneurial Education Post-School**: colleges offer courses in how to start a business
E	**Research and Development Transfers**: research is easily transferred into new businesses
F	**Commercial and Professional infrastructure**: quality services are available and affordable
G1	**Ease of Entry — Market Dynamics**: markets are free, open, and growing
G2	**Ease of Entry — Burdens and Regulations**: regulations encourage not restrict entry
H	**Physical Infrastructure**: good-quality, available, and affordable
I	**Social and Cultural Norms**: encourage and celebrate entrepreneurship

In 2018, GEM launched the National Entrepreneurship Context Index (NECI) to provide an overall score for an economy's entrepreneurial environment. The NECI score, calculated as the arithmetic mean of the scores from the Entrepreneurial Framework Conditions (EFCs), ranges on a Likert scale from 0 to 10. Figure 9.1 presents the

[1] Recently, the Luxembourg Observatory of Entrepreneurship and Innovation (LOEI) developed an online tool that maps the main players in Luxembourg's entrepreneurship ecosystem. The tool is available at `https://www.uni.lu/fdef-en/news/a-new-interactive-map-unlocks-the-puzzle-of-luxembourgs-entrepreneurship-ecosystem/`.

NECI scores across 20 European countries for 2024 and 2023, revealing that five countries are above the sufficient threshold of 5 points. Lithuania, Switzerland and Estonia are the three top performers and Latvia and Norway are just few decimal above the 5 point threshold. Among the 20 countries surveyed, 17 experienced either no change or a marginal decline in their NECI scores from 2023 to 2024, with only Spain and Norway showing a slight increase. Over the period 2023 to 2024, Luxembourg's NECI score remained essentially stable, standing at 4.6 in 2024. Overall, NECI scores have not changed substantially between 2023 and 2024. They highlight a degree of heterogeneity in the quality of the entrepreneurial environment across the countries. Luxembourg overall score is in line with the cross-country average.

Figure 9.1: National Entrepreneurship Context Index.



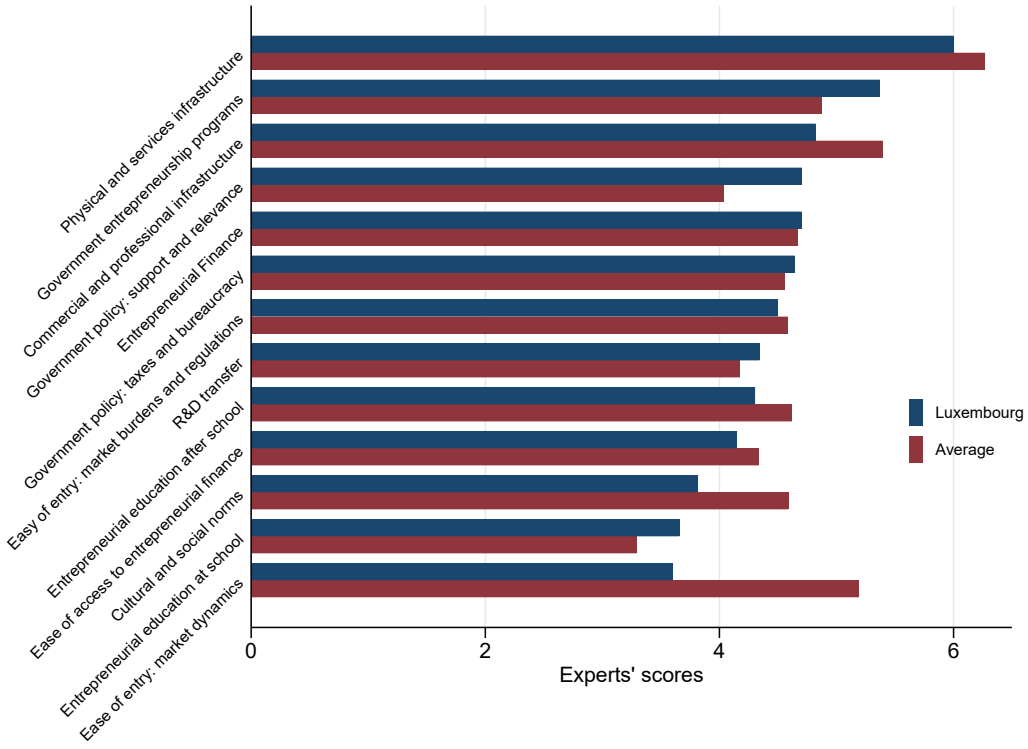
Source: 2024 and 2023 GEM Global NES data.

Figure 9.2 presents Luxembourg's scores across the individual components of the Entrepreneurial Framework Conditions (EFCs), ranked from highest (infrastructure) to lowest (internal markets), and compares them with the European average. In 2024, Luxembourg performed above the European average in 6 out of 13 indicators — a slight decline from 2023, when it exceeded the average in 7 areas (GEM Luxembourg, 2024). Although the differences are not always large, they remain notable. Luxembourg's main strengths include government entrepreneurship programmes and government policy support. Experts also held positive views on entrepreneurial education and R&D transfer. In contrast, the areas where Luxembourg scored significantly below the European average include market dynamics, cultural and social norms, commercial and professional services, and infrastructure. While infrastructure is the most highly rated factor within Luxembourg, it still lags behind the European benchmark. **The national experts introduced only slight changes in the internal ranking of strengths and weaknesses, but the overall**

profile of Luxembourg's entrepreneurial ecosystem has remained relatively stable compared to previous years (GEM Luxembourg, 2024).

The assessment provided by Luxembourg's national experts in 2024 is broadly consistent with the OECD benchmarking of entrepreneurial ecosystems (OECD, 2025) that is based on approximately 40 indicators. Both point to strong institutions and good support services as key strengths, while structural constraints such as market dynamics and infrastructure continue to limit development (see Exhibit: OECD Entrepreneurial Ecosystem Diagnostics for more details).

Figure 9.2: Experts' scores on Entrepreneurial Framework Conditions.



Source: 2024 and 2023 GEM Global NES data.

Exhibit: OECD Entrepreneurial Ecosystem Diagnostics – Luxembourg

In 2025, the OECD released the first edition of the *Entrepreneurial Ecosystem Diagnostics*, a benchmarking tool designed to evaluate the entreprenurship ecosystem across OECD countries (OECD, 2025). The diagnostics cover ten entrepreneurial ecosystem inputs (Institutions, Culture, Networks, Infrastructure, Markets, Finance, Knowledge, Talent, Leadership, and Intermediate Services) each summarised in a composite index derived from around 40 indicators. Ecosystem output measures capture the level of entrepreneurial activity, while ecosystem variation measures reflect the social and regional distribution of entrepreneurship outcomes.

The OECD exercise builds on academic literature that conceptualises ecosystems as interdependent systems of institutions, culture, finance, and networks (Stam, 2015; Spigel, 2017; Autio et al., 2014), and is broadly consistent with the GEM framework. Notably, five of the OECD's indicators are based on data collected by the GEM consortium.

Results for 2024 indicate that Luxembourg's entrepreneurial ecosystem benefits from strong institutions and good support services. Yet structural constraints, particularly market size and infrastructure, continue to shape its development.

The main **strengths** for Luxembourg are strong institutional quality, one of the highest densities of incubators in the OECD, and a relatively high number of equity-based young firms relative to its population (OECD, 2025). Luxembourg also ranks among the leading countries where entrepreneurs expect to generate employment. On a scale from 0 (minimum) to 100 (maximum), Luxembourg scores reasonably well in Intermediate Services (52.0), Networks (46.9), and Infrastructure (47.3).

At the same time, there are **challenges**. Transport infrastructure indicators have weakened compared with peers, the small domestic market limits scaling opportunities, and Luxembourg has yet to reach the level of unicorn creation observed in larger ecosystems (OECD, 2025). On the same 0–100 scale, performance is weaker in Markets (32.1) and Leadership (33.8).

10 GEM Indicators

Knowing an Entrepreneur Percentage of adults aged 18–64 who personally know someone who has started a business in the past two years.

Perceived Opportunities

Percentage of adults aged 18–64 who agree that they see good opportunities to start a business within the next six months in the area in which they live.

Ease of Starting a Business

Percentage of adults aged 18–64 who agree that it is easy to start a business in their country.

Perceived Capabilities

Percentage of adults aged 18–64 who agree that they have the required knowledge, skills, and experience to start a business.

Fear of Failure Rate

Percentage of adults aged 18–64 who agree that they see good opportunities but would not start a business for fear it might fail.

Nascent Entrepreneurship Rate

Percentage of adults aged 18–64 who are currently nascent entrepreneurs, i.e., are actively involved in setting up a business they will own or co-own; this business has not yet paid salaries, wages, or made any other payments to the owners for more than three months.

New Business Ownership Rate

Percentage of adults aged 18–64 who are currently owner-managers of a new business, i.e., who own and manage a running business that has paid salaries, wages, or made any other payments to the owners for more than three months, but not more than 42 months (3.5 years).

Total Early-stage Entrepreneurial Activity (TEA)

Percentage of adults aged 18–64 who are either nascent entrepreneurs or owner-managers of a new business, i.e., the proportion of the adult population who are either starting or running a new business.

Established Business Ownership Rate (EBO)

Percentage of adults aged 18–64 who are currently owner-managers of an established business, i.e., who are owning and managing a running business that has paid salaries, wages, or made any other payments to the owners for over 42 months (3.5 years).

Business Services

Percentage of TEA respondents involved in business services.

Consumer Services

Percentage of TEA respondents involved in consumer services.

Entrepreneurial Employee Activity (EEA)

Percentage of adults aged 18–64 who, as employees, have been involved in entrepreneurial activities such as developing or launching new goods or services, or setting up a new business unit, a new establishment, or a subsidiary in the last three years.

Sponsored

Percentage of adults aged 18–64 involved in TEA and that business is part-owned with their employer.

Independent

Percentage of adults aged 18–64 involved in TEA and that business is independently owned.

Motive for Starting a Business: "To make a difference in the world"

Percentage of TEA respondents who agree that a reason for starting their business is "to make a difference in the world".

Motive for Starting a Business: "To build great wealth or very high income"

Percentage of TEA respondents who agree that a reason for starting their business is "to build great wealth or a very high income".

Motive for Starting a Business: "To continue a family tradition"

Percentage of TEA respondents who agree that a reason for starting their business is "to continue a family tradition".

Motive for Starting a Business: "To earn a living because jobs are scarce"

Percentage of TEA respondents who agree that a reason for starting their business is "to earn a living because jobs are scarce".

High Growth Expectation Entrepreneurial Activity

Percentage of adults aged 18–64 involved in TEA who expect to employ six or more people five years from now.

Internationally Oriented Entrepreneurial Activity

Percentage of adults aged 18–64 involved in TEA who anticipate 25% or more revenue coming from outside their country.

Scope (local/national/international)

Percentage of adults aged 18–64 involved in TEA having customers only within their local area, only within their country, or those having international customers.

Product/Services Impact (local/national/global)

Percentage of adults aged 18–64 involved in TEA having products or services that are new to the area, new to their country, or new to the world.

Technology/Procedures Impact (local/national/global)

Percentage of adults aged 18–64 involved in TEA having technology or procedures that are new to the area, new to their country, or new to the world.

Informal Investment

Percentage of adults aged 18–64 investing in someone else's new business in the last three years.

Business Exit Rate

Percentage of adults aged 18–64 who have exited a business in the past 12 months, either by selling, shutting down, or otherwise discontinuing an owner/management relationship with that business.

Exit, Business Continues

Percentage of adults aged 18–64 who have exited a business in the past 12 months and that business has continued.

Exit, Business Does Not Continue

Percentage of adults aged 18–64 who have exited a business in the past 12 months and that business has not continued.

11 Tables

Country	Year	Potential	TEA	Established	Discontinued
Average	2024	17.02	9.37	7.02	2.83
	2023	14.97	9.13	7.53	2.24
Croatia	2024	29.90	13.06	4.38	2.10
	2023	27.99	13.15	5.19	2.58
Cyprus	2024	25.75	9.69	8.36	2.70
	2023	23.41	11.04	8.16	1.88
Estonia	2024	18.56	13.36	6.48	3.81
	2023	18.29	13.09	7.88	3.09
France	2024	17.18	8.71	4.45	2.63
	2023	17.23	10.75	4.56	2.32
Germany	2024	15.64	9.84	6.00	3.35
	2023	11.72	7.69	4.10	1.36
Greece	2024	8.42	5.53	14.84	1.14
	2023	10.63	6.74	14.70	1.65
Hungary	2024	9.91	6.71	6.90	1.71
	2023	10.83	9.88	7.38	3.09
Italy	2024	22.62	9.63	6.85	3.38
	2023	13.98	8.33	7.75	1.84
Latvia	2024	26.08	12.11	8.90	2.63
	2023	24.35	14.34	10.66	2.49
Lithuania	2024	25.54	11.61	3.21	7.12
	2023	11.99	6.68	14.55	1.21
Luxembourg	2024	20.78	9.86	4.37	3.17
	2023	18.88	9.67	4.20	3.14
Norway	2024	12.70	9.98	6.11	2.15
	2023	10.90	6.92	7.56	1.99
Poland	2024	3.17	2.45	12.82	2.44
	2023	3.53	2.59	11.64	2.51
Romania	2024	8.08	4.97	4.21	1.52
	2023	8.95	5.85	5.09	1.27
Slovakia	2024	16.34	11.53	5.02	3.12
	2023	15.41	10.75	3.97	2.11
Slovenia	2024	18.57	8.59	8.69	3.13
	2023	18.01	7.07	8.84	2.32
Spain	2024	11.23	7.21	6.76	2.19
	2023	11.17	6.79	6.73	2.18
Sweden	2024	12.96	8.37	5.09	2.59
	2023	13.23	9.25	5.46	3.30
Switzerland	2024	15.16	9.89	7.19	1.44
	2023	15.00	10.29	5.83	2.07
United Kingdom	2024	21.87	14.22	9.78	4.20
	2023	13.92	11.76	6.26	2.34

Country	Year	Know ent.	Good opport.	Have skills	Fear fail.	Easy start
Average	2024	52.31	48.40	51.50	47.07	50.19
	2023	51.64	49.31	52.11	45.43	50.58
Croatia	2024	73.55	67.28	73.81	46.02	44.07
	2023	71.75	64.09	73.60	45.90	40.92
Cyprus	2024	68.32	40.22	59.91	50.82	47.82
	2023	66.93	39.81	60.54	53.28	50.02
Estonia	2024	43.75	45.84	44.68	45.08	72.57
	2023	44.31	49.48	46.82	40.86	77.29
France	2024	55.62	42.79	45.02	42.70	48.84
	2023	60.50	50.86	49.51	40.08	50.49
Germany	2024	40.31	42.68	41.07	45.33	32.86
	2023	36.54	41.43	42.15	38.62	36.11
Greece	2024	31.49	38.70	53.37	54.07	30.36
	2023	33.09	45.29	53.76	53.16	34.65
Hungary	2024	46.74	32.34	35.83	36.37	43.23
	2023	51.03	28.22	38.29	34.41	45.80
Italy	2024	49.45	35.20	55.13	49.46	21.94
	2023	46.30	33.75	50.85	48.48	17.68
Latvia	2024	48.17	40.46	54.00	47.91	34.15
	2023	43.86	42.99	52.39	46.96	32.71
Lithuania	2024	71.06	50.64	55.59	48.10	40.85
	2023	69.97	61.24	57.14	34.62	42.34
Luxembourg	2024	47.60	47.68	48.79	41.38	60.99
	2023	45.79	49.31	50.21	47.29	60.44
Norway	2024	47.52	61.95	49.88	40.51	74.09
	2023	49.16	68.00	54.56	43.06	76.69
Poland	2024	46.76	73.65	47.66	51.81	83.35
	2023	46.10	73.64	48.04	52.25	83.21
Romania	2024	46.74	60.04	53.05	67.40	34.55
	2023	45.54	55.67	52.62	58.07	35.97
Slovakia	2024	62.31	38.75	52.43	44.10	32.56
	2023	59.76	32.86	50.74	48.13	24.24
Slovenia	2024	57.57	56.15	66.43	46.11	71.56
	2023	55.38	50.23	62.84	44.23	62.63
Spain	2024	46.62	29.30	48.13	44.41	26.85
	2023	48.30	30.65	53.18	46.22	29.90
Sweden	2024	53.34	66.21	46.32	45.48	78.42
	2023	51.53	68.96	47.19	43.41	79.72
Switzerland	2024	56.17	48.65	44.42	37.28	66.12
	2023	54.17	52.49	44.89	36.35	67.49
United Kingdom	2024	53.09	49.54	54.45	57.00	58.60
	2023	52.86	47.18	52.83	53.20	63.20

Country	Year	Lower growth exp.	Scarce jobs	Diff. In the world
Average	2024	28.92	56.95	42.67
	2023	27.35	58.37	41.66
Croatia	2024	20.86	66.23	28.59
	2023	23.20	59.09	35.52
Cyprus	2024	14.94	57.06	47.51
	2023	22.04	65.46	39.66
Estonia	2024	42.73	53.97	34.59
	2023	37.14	54.56	33.38
France	2024	29.79	53.41	24.87
	2023	24.31	43.21	19.88
Germany	2024	41.85	52.52	45.27
	2023	35.94	46.68	50.43
Greece	2024	29.51	75.28	32.75
	2023	31.04	72.28	26.07
Hungary	2024	23.91	51.14	68.57
	2023	27.03	89.83	45.84
Italy	2024	24.64	59.07	36.71
	2023	23.79	58.21	35.28
Latvia	2024	24.86	56.95	33.48
	2023	19.79	64.02	43.47
Lithuania	2024	38.10	71.03	48.01
	2023	17.72	83.68	42.44
Luxembourg	2024	43.66	37.88	57.89
	2023	38.40	47.18	50.61
Norway	2024	23.54	31.88	39.89
	2023	28.80	25.33	37.40
Poland	2024	11.79	71.44	16.41
	2023	14.04	62.80	20.49
Romania	2024	32.23	84.20	55.40
	2023	24.89	87.50	66.58
Slovakia	2024	37.79	71.58	38.69
	2023	11.80	70.42	37.08
Slovenia	2024	12.18	51.13	49.86
	2023	30.13	49.08	56.10
Spain	2024	34.21	52.42	40.09
	2023	36.06	57.07	37.55
Sweden	2024	26.08	32.51	46.09
	2023	33.40	29.13	43.07
Switzerland	2024	32.27	43.99	52.27
	2023	33.68	40.55	53.63
United Kingdom	2024	33.43	65.28	56.56
	2023	33.75	61.35	58.77

Country	Year	Consider env.	Consider soc.	Soc./env. > profit
Average	2024	72.55	73.10	52.96
	2023	69.36	67.97	49.95
Croatia	2024	69.54	76.11	57.81
	2023	77.81	78.90	65.86
Cyprus	2024	41.13	44.10	36.59
	2023	12.04	13.01	20.56
Estonia	2024	60.23	57.62	33.99
	2023	61.58	54.95	33.08
France	2024	70.00	69.72	60.20
	2023	67.09	66.61	53.17
Germany	2024	67.05	69.72	58.04
	2023	70.56	72.76	50.66
Greece	2024	87.69	85.97	53.01
	2023	78.81	71.29	59.87
Hungary	2024	77.97	69.87	43.36
	2023	77.44	72.33	43.68
Italy	2024	79.23	77.97	75.50
	2023	79.80	73.22	68.88
Latvia	2024	77.50	77.62	41.25
	2023	77.45	75.83	40.90
Lithuania	2024	66.49	75.66	50.49
	2023	52.39	60.59	40.36
Luxembourg	2024	82.35	79.72	53.93
	2023	75.94	73.61	53.75
Norway	2024	74.95	57.10	54.43
	2023	65.93	50.18	40.67
Poland	2024	91.79	87.18	24.12
	2023	88.89	85.92	24.27
Romania	2024	82.79	84.50	78.99
	2023	82.73	83.97	74.64
Slovakia	2024	79.78	82.62	70.65
	2023	80.45	80.32	62.64
Slovenia	2024	88.20	88.33	66.04
	2023	77.67	73.99	64.45
Spain	2024	57.12	62.79	43.34
	2023	58.78	60.12	44.15
Sweden	2024	54.57	57.61	43.78
	2023	53.83	60.10	48.94
Switzerland	2024	73.56	81.54	53.12
	2023	75.41	70.88	52.00
United Kingdom	2024	69.00	76.26	60.54
	2023	72.63	80.84	56.44

Country	Year	Env.: have taken steps	Soc.: have taken steps
Average	2024	52.42	41.51
	2023	52.34	41.23
Croatia	2024	61.21	46.33
	2023	66.13	58.04
Cyprus	2024	47.39	37.66
	2023	58.48	41.73
Estonia	2024	39.91	24.43
	2023	41.03	23.88
France	2024	44.48	37.50
	2023	32.50	24.39
Germany	2024	56.50	52.30
	2023	49.74	53.09
Greece	2024	50.55	42.29
	2023	65.62	48.83
Hungary	2024	50.82	44.55
	2023	59.93	40.91
Italy	2024	54.32	43.23
	2023	63.05	46.67
Latvia	2024	45.87	25.66
	2023	41.95	29.69
Lithuania	2024	51.70	44.75
	2023	31.73	36.36
Luxembourg	2024	60.63	56.33
	2023	65.82	53.52
Norway	2024	47.35	36.05
	2023	40.02	25.03
Poland	2024	56.92	45.06
	2023	55.67	52.22
Romania	2024	62.33	51.24
	2023	60.58	55.62
Slovakia	2024	57.57	39.95
	2023	57.48	38.08
Slovenia	2024	37.83	27.05
	2023	40.28	35.09
Spain	2024	51.38	44.01
	2023	51.96	40.28
Sweden	2024	52.07	40.42
	2023	53.38	36.79
Switzerland	2024	61.36	37.59
	2023	64.50	49.36
United Kingdom	2024	58.18	53.71
	2023	46.98	35.10

Country	Year	AI very important	AI 3 years from now: very important
Average	2024	22.34	24.09
	2023		
Croatia	2024	20.88	19.28
	2023		
Cyprus	2024	32.27	36.50
	2023		
Estonia	2024	19.48	20.22
	2023		
France	2024	22.64	21.98
	2023		
Germany	2024	25.48	39.40
	2023		
Greece	2024	24.10	33.15
	2023		
Hungary	2024	14.82	22.15
	2023		
Italy	2024	22.30	19.10
	2023		
Latvia	2024	25.08	20.06
	2023		
Lithuania	2024	18.49	17.86
	2023		
Luxembourg	2024	33.65	37.46
	2023		
Norway	2024	21.34	23.35
	2023		
Poland	2024	6.16	8.21
	2023		
Romania	2024	18.44	15.87
	2023		
Slovakia	2024	25.04	25.31
	2023		
Slovenia	2024	27.66	27.24
	2023		
Spain	2024	24.52	28.64
	2023		
Sweden	2024	23.83	23.16
	2023		
Switzerland	2024	14.14	14.37
	2023		
United Kingdom	2024	26.39	28.44
	2023		

Country	Year	Enhanced personalization	Improved prod./efficiency
Average	2024	41.40	47.11
	2023		
Croatia	2024	43.95	46.07
	2023		
Cyprus	2024	43.71	46.18
	2023		
Estonia	2024	32.15	43.02
	2023		
France	2024	45.28	50.01
	2023		
Germany	2024	37.18	54.18
	2023		
Greece	2024	44.13	45.40
	2023		
Hungary	2024	35.29	45.04
	2023		
Italy	2024	42.67	47.27
	2023		
Latvia	2024	53.92	61.74
	2023		
Lithuania	2024	44.67	50.42
	2023		
Luxembourg	2024	61.36	67.89
	2023		
Norway	2024	37.67	40.04
	2023		
Poland	2024	10.21	3.06
	2023		
Romania	2024	50.42	58.58
	2023		
Slovakia	2024	41.38	40.52
	2023		
Slovenia	2024	36.82	53.26
	2023		
Spain	2024	47.27	50.11
	2023		
Sweden	2024	35.85	43.96
	2023		
Switzerland	2024	37.95	44.77
	2023		
United Kingdom	2024	46.24	50.71
	2023		

Country	Year	Innovation	Risk management	Increased revenue
Average	2024	42.29	36.05	39.85
	2023			
Croatia	2024	46.83	35.76	38.74
	2023			
Cyprus	2024	40.96	38.16	47.27
	2023			
Estonia	2024	40.38	29.70	33.01
	2023			
France	2024	43.46	37.82	36.27
	2023			
Germany	2024	39.11	31.30	23.39
	2023			
Greece	2024	55.30	53.58	38.99
	2023			
Hungary	2024	42.42	39.92	33.26
	2023			
Italy	2024	45.89	38.83	46.92
	2023			
Latvia	2024	60.17	43.16	52.91
	2023			
Lithuania	2024	46.42	42.22	52.45
	2023			
Luxembourg	2024	51.53	36.31	47.31
	2023			
Norway	2024	35.08	30.13	35.71
	2023			
Poland	2024	6.63	10.71	8.67
	2023			
Romania	2024	46.71	54.78	61.68
	2023			
Slovakia	2024	43.40	36.18	41.11
	2023			
Slovenia	2024	39.22	26.77	36.93
	2023			
Spain	2024	43.63	44.58	42.56
	2023			
Sweden	2024	38.83	26.44	36.71
	2023			
Switzerland	2024	28.82	23.08	27.02
	2023			
United Kingdom	2024	50.94	41.52	56.06
	2023			

Country	Year	Data security/privacy	Increased cost
Average	2024	44.72	32.54
	2023		
Croatia	2024	43.61	32.74
	2023		
Cyprus	2024	44.08	38.17
	2023		
Estonia	2024	34.31	19.32
	2023		
France	2024	50.87	35.41
	2023		
Germany	2024	40.21	33.74
	2023		
Greece	2024	54.21	45.02
	2023		
Hungary	2024	28.78	27.62
	2023		
Italy	2024	43.84	34.79
	2023		
Latvia	2024	51.93	32.73
	2023		
Lithuania	2024	47.58	34.73
	2023		
Luxembourg	2024	57.62	38.60
	2023		
Norway	2024	47.68	26.73
	2023		
Poland	2024	1.53	9.18
	2023		
Romania	2024	59.20	51.93
	2023		
Slovakia	2024	43.36	32.66
	2023		
Slovenia	2024	45.15	15.84
	2023		
Spain	2024	50.63	36.48
	2023		
Sweden	2024	50.20	29.47
	2023		
Switzerland	2024	50.91	35.05
	2023		
United Kingdom	2024	48.72	40.61
	2023		

Country	Year	Resistance employees	Ethical dilemmas	Resistance customers
Average	2024	26.50	31.37	31.36
	2023			
Croatia	2024	24.11	31.10	29.84
	2023			
Cyprus	2024	36.48	33.81	37.80
	2023			
Estonia	2024	19.03	26.81	21.12
	2023			
France	2024	31.47	34.98	42.02
	2023			
Germany	2024	31.78	32.33	27.99
	2023			
Greece	2024	28.34	31.51	25.29
	2023			
Hungary	2024	14.35	17.82	20.34
	2023			
Italy	2024	28.13	33.70	35.28
	2023			
Latvia	2024	19.65	28.55	31.82
	2023			
Lithuania	2024	26.71	24.65	32.25
	2023			
Luxembourg	2024	33.62	35.80	35.71
	2023			
Norway	2024	18.20	32.02	25.68
	2023			
Poland	2024	14.36	11.80	5.63
	2023			
Romania	2024	51.09	35.85	46.97
	2023			
Slovakia	2024	25.79	32.62	35.10
	2023			
Slovenia	2024	14.77	33.22	25.91
	2023			
Spain	2024	28.45	34.21	33.33
	2023			
Sweden	2024	25.68	39.62	31.31
	2023			
Switzerland	2024	26.60	42.46	38.55
	2023			
United Kingdom	2024	31.30	34.50	45.36
	2023			

Country	Year	New products
Average	2024	32.77
	2023	29.60
Croatia	2024	29.74
	2023	37.49
Cyprus	2024	35.68
	2023	31.01
Estonia	2024	26.29
	2023	22.82
France	2024	36.95
	2023	38.59
Germany	2024	37.20
	2023	28.65
Greece	2024	31.51
	2023	22.18
Hungary	2024	25.57
	2023	29.69
Italy	2024	51.07
	2023	45.18
Latvia	2024	27.57
	2023	24.43
Lithuania	2024	23.03
	2023	3.38
Luxembourg	2024	39.39
	2023	39.53
Norway	2024	26.61
	2023	27.49
Poland	2024	31.12
	2023	31.86
Romania	2024	10.63
	2023	15.73
Slovakia	2024	30.22
	2023	24.49
Slovenia	2024	22.85
	2023	27.30
Spain	2024	48.69
	2023	33.47
Sweden	2024	31.90
	2023	38.46
Switzerland	2024	44.65
	2023	33.90
United Kingdom	2024	38.30
	2023	29.54

Country	Year	NECI average
Average	2024	4.63
	2023	4.68
Croatia	2024	3.94
	2023	4.26
Cyprus	2024	4.20
	2023	4.00
Estonia	2024	5.42
	2023	5.93
France	2024	4.82
	2023	4.95
Germany	2024	4.65
	2023	4.77
Greece	2024	4.38
	2023	4.55
Hungary	2024	4.50
	2023	4.47
Italy	2024	4.51
	2023	4.45
Latvia	2024	5.11
	2023	4.95
Lithuania	2024	6.42
	2023	6.10
Luxembourg	2024	4.50
	2023	4.60
Norway	2024	5.03
	2023	4.72
Poland	2024	3.96
	2023	4.25
Romania	2024	4.33
	2023	4.30
Slovakia	2024	3.74
	2023	4.03
Slovenia	2024	4.14
	2023	4.79
Spain	2024	4.28
	2023	3.82
Sweden	2024	4.53
	2023	4.68
Switzerland	2024	5.69
	2023	5.46
United Kingdom	2024	4.50
	2023	4.60

Country	Year	Infrastruct. (general)	Infrastruct. (pro./comm.)	Gvt: programs
Average	2024	6.21	5.39	4.77
	2023	6.33	5.45	4.85
Croatia	2024	5.74	4.39	3.99
	2023	5.66	4.71	4.36
Cyprus	2024	5.97	5.28	3.65
	2023	5.71	5.01	3.59
Estonia	2024	6.98	5.20	5.24
	2023	6.95	5.55	5.67
France	2024	6.67	5.62	5.87
	2023	6.64	5.75	5.86
Germany	2024	5.60	5.89	5.90
	2023	5.69	5.74	6.40
Greece	2024	5.38	5.51	4.21
	2023	5.63	5.69	4.47
Hungary	2024	6.36	5.35	4.31
	2023	6.30	5.69	4.37
Italy	2024	5.46	4.94	4.42
	2023	5.71	4.90	4.40
Latvia	2024	4.95	4.98	5.23
	2023	7.06	5.89	4.82
Lithuania	2024	7.94	6.60	6.59
	2023	7.74	6.58	6.47
Luxembourg	2024	6.00	4.82	5.37
	2023	5.57	4.59	4.97
Norway	2024	7.45	6.59	6.26
	2023	7.13	5.90	5.39
Poland	2024	5.71	4.53	3.86
	2023	5.88	5.32	4.38
Romania	2024	5.96	5.83	3.64
	2023	6.05	5.77	3.82
Slovakia	2024	6.36	4.71	3.04
	2023	6.52	4.89	3.35
Slovenia	2024	5.81	4.88	4.42
	2023	6.46	5.66	5.31
Spain	2024	6.51	5.73	4.79
	2023	6.24	4.87	4.42
Sweden	2024	6.16	4.81	4.26
	2023	6.74	5.11	4.71
Switzerland	2024	7.59	6.74	6.10
	2023	7.44	6.17	6.03
United Kingdom	2024	5.67	5.35	4.34
	2023	5.40	5.25	4.13

Country	Year	Gvt: bureauc./taxes	Internal market	Entr. educ. after school
Average	2024	4.55	4.57	4.62
	2023	4.75	4.59	4.74
Croatia	2024	3.99	3.62	3.43
	2023	4.28	3.96	4.00
Cyprus	2024	4.87	4.05	4.46
	2023	4.92	3.80	4.28
Estonia	2024	5.13	5.33	5.15
	2023	6.49	5.65	6.17
France	2024	4.61	4.23	4.92
	2023	4.88	4.69	5.12
Germany	2024	4.11	4.89	4.90
	2023	4.24	4.95	5.01
Greece	2024	4.64	4.45	3.82
	2023	4.87	4.50	4.03
Hungary	2024	4.74	4.51	4.87
	2023	4.99	4.41	4.32
Italy	2024	3.58	4.75	4.90
	2023	3.85	4.25	4.62
Latvia	2024	5.47	5.39	4.94
	2023	5.08	5.34	5.41
Lithuania	2024	6.56	6.25	6.45
	2023	6.21	6.01	5.94
Luxembourg	2024	4.64	4.50	4.30
	2023	4.88	4.40	5.20
Norway	2024	4.71	5.20	4.66
	2023	4.69	4.44	4.81
Poland	2024	3.92	4.16	2.74
	2023	4.01	4.24	3.17
Romania	2024	3.95	4.49	4.76
	2023	4.34	4.43	4.55
Slovakia	2024	3.03	4.01	4.09
	2023	3.94	4.32	4.25
Slovenia	2024	3.74	4.04	4.21
	2023	4.32	4.87	4.86
Spain	2024	3.75	4.00	5.21
	2023	3.42	3.53	4.43
Sweden	2024	4.94	3.33	4.48
	2023	4.74	4.35	4.48
Switzerland	2024	5.73	5.67	5.58
	2023	5.59	4.88	5.56
United Kingdom	2024	4.94	4.55	4.57
	2023	5.16	4.71	4.57

Country	Year	RD transfer	Gvt: support	Cultural/social norms
Average	2024	4.18	4.04	4.63
	2023	4.25	4.03	4.67
Croatia	2024	3.08	3.54	2.89
	2023	3.50	3.48	3.26
Cyprus	2024	3.60	3.99	4.62
	2023	3.40	3.86	3.80
Estonia	2024	4.62	3.99	7.31
	2023	4.85	4.84	7.56
France	2024	4.34	5.13	4.17
	2023	4.53	5.31	4.50
Germany	2024	4.55	4.08	3.99
	2023	4.63	4.18	4.11
Greece	2024	4.57	4.37	4.40
	2023	4.79	4.49	4.47
Hungary	2024	4.01	4.02	4.09
	2023	3.92	3.62	4.19
Italy	2024	4.07	4.25	4.82
	2023	4.30	4.43	4.44
Latvia	2024	4.97	4.67	5.40
	2023	4.11	3.44	4.95
Lithuania	2024	5.70	6.09	6.77
	2023	5.56	5.88	6.56
Luxembourg	2024	4.34	4.70	3.81
	2023	4.73	4.31	4.59
Norway	2024	4.90	3.41	4.90
	2023	4.43	3.52	4.97
Poland	2024	3.12	3.56	4.25
	2023	3.58	3.56	4.52
Romania	2024	3.40	3.72	4.13
	2023	3.83	3.25	3.61
Slovakia	2024	2.63	2.30	3.18
	2023	2.94	2.64	3.17
Slovenia	2024	3.61	3.33	3.86
	2023	4.20	3.93	4.16
Spain	2024	3.75	3.45	4.26
	2023	3.65	3.50	3.52
Sweden	2024	4.04	3.18	5.19
	2023	4.04	3.58	5.57
Switzerland	2024	6.35	5.31	5.67
	2023	5.96	5.10	5.96
United Kingdom	2024	3.93	3.72	4.84
	2023	3.95	3.71	5.53

Country	Year	Market dynamics	Entr. educ. at school	Financing: sufficient
Average	2024	5.15	3.34	4.67
	2023	5.14	3.28	4.69
Croatia	2024	6.23	2.78	4.58
	2023	6.33	2.96	4.72
Cyprus	2024	4.24	3.10	3.64
	2023	4.57	2.33	3.57
Estonia	2024	6.26	4.71	5.32
	2023	6.21	5.42	5.60
France	2024	4.71	2.30	5.17
	2023	3.99	2.70	5.36
Germany	2024	5.20	2.43	4.72
	2023	5.51	2.73	4.83
Greece	2024	5.29	2.64	4.19
	2023	5.07	3.06	4.38
Hungary	2024	5.36	2.68	4.25
	2023	5.19	2.36	4.44
Italy	2024	5.44	3.66	4.71
	2023	4.96	3.51	4.48
Latvia	2024	5.07	5.08	5.20
	2023	5.01	3.60	4.93
Lithuania	2024	6.17	5.62	6.15
	2023	5.82	4.68	5.75
Luxembourg	2024	3.60	3.66	4.70
	2023	3.82	4.19	4.62
Norway	2024	4.03	4.24	4.92
	2023	4.15	3.48	4.67
Poland	2024	6.56	1.96	4.16
	2023	6.59	2.39	4.39
Romania	2024	5.75	2.54	4.01
	2023	5.24	2.84	4.08
Slovakia	2024	5.16	3.04	3.97
	2023	5.53	3.08	4.12
Slovenia	2024	5.13	3.06	4.31
	2023	6.56	3.29	4.64
Spain	2024	4.00	2.84	3.92
	2023	4.28	2.35	3.65
Sweden	2024	5.69	3.93	5.07
	2023	4.50	4.00	4.95
Switzerland	2024	3.79	3.54	5.88
	2023	3.88	3.67	5.78
United Kingdom	2024	5.28	2.96	4.51
	2023	5.53	3.05	4.84

Country	Year	Financing: easiness
Average	2024	4.33
	2023	4.31
Croatia	2024	3.77
	2023	4.34
Cyprus	2024	3.73
	2023	3.82
Estonia	2024	5.04
	2023	5.11
France	2024	5.13
	2023	5.40
Germany	2024	4.52
	2023	4.30
Greece	2024	3.86
	2023	4.01
Hungary	2024	4.36
	2023	4.53
Italy	2024	4.05
	2023	4.14
Latvia	2024	5.07
	2023	4.69
Lithuania	2024	5.97
	2023	5.40
Luxembourg	2024	4.15
	2023	4.13
Norway	2024	3.93
	2023	3.66
Poland	2024	3.51
	2023	3.83
Romania	2024	4.44
	2023	4.28
Slovakia	2024	3.75
	2023	4.12
Slovenia	2024	4.05
	2023	4.27
Spain	2024	4.04
	2023	3.28
Sweden	2024	3.92
	2023	4.05
Switzerland	2024	5.39
	2023	4.72
United Kingdom	2024	3.97
	2023	4.20

12 Methodological Section: survey design and fieldwork report

Methodological Appendix: GEM Luxembourg 2024/2025

This appendix documents the key methodological features of the GEM Adult Population Survey (APS) and the National Expert Survey (NES) conducted in Luxembourg in 2024. Special attention is devoted to comparing APS figures with other indicators of entrepreneurship. Additional information about GEM's global methodology, technical documents, and instruments is available at `https://www.gemconsortium.org/about/wiki`.

APS Study Information

- **Purpose and Objectives:** The APS aims to collect internationally comparable data on individual entrepreneurial activity, motivations, attitudes, and perceived barriers. In Luxembourg, it supports policy-relevant research by STATEC Research.
- **Target Population:** Residents aged 18–64 living in Luxembourg at the time of the survey.
- **Survey Design:** Cross-sectional, conducted annually as part of the GEM international harmonised survey.
- **Legal Basis:** While not explicitly mandated by law, the survey is carried out within the framework of the Law of 10 July 2011 on the organisation of the National Institute for Statistics and Economic Studies (STATEC). Participation is voluntary.

Sampling and Weighting

- **Sampling Design:** A mixed-mode, multi-frame sampling approach was used:
  - **CAWI(Computer-Assisted Web Interviewing)** Conducted via the opt-in panel *mypanel.lu* managed by ILRES, stratified by age, gender, nationality, and region of residence.
  - **CATI (Computer-Assisted Telephone Interviewing) Mobile and Landline:** Random Digit Dialling (RDD) methods were used. For landlines, the "last birthday" method was applied to randomly select one adult in the household.
- **Sampling Frames:**
  - **CAWI:** Non-probability opt-in panel with over 17 000 registered members.

  - **CATI:** Validated telephone number database built by ILRES, including over 500 000 numbers. The CATI sample was drawn probabilistically using RLD (Random Last Digit) methodology.
- **Sample Size:** A total of 2021 interviews were completed: 1 233 via CAWI, 597 via CATI mobile, and 203 via CATI landline.
- **Weighting Procedure:** Unweighted data show that older respondents,especially males, are overrepresented compared to the target population. The extent of this imbalance varies by survey mode. Post-stratification weights were computed based on auxiliary variables from official population statistics: employment status (employed, self-employed, unemployed, inactive), gender by country of birth, age by gender, and education level. Mode-specific weights were computed and then calibrated to the total population. Final weights were rescaled to a mean of 1, with values trimmed at 15.

Data Collection

- **Mode:** Mixed-mode (60% CAWI, 25% CATI mobile, 15% CATI landline).
- **Fieldwork Period:** 07 May 2024 – 11 June 2024.
- **Languages:** The questionnaire was available in Luxembourgish, French, German, and English.
- **Vendor:** ILRES conducted the fieldwork on behalf of STATEC Research.
- **Instruments:** Harmonised GEM questionnaire; all materials available at `https://www.gemconsortium.org`.

Response Rates and Disposition Codes

- **Follow-ups:** Up to 5 call attempts or reminders per case.
- **Response Rate Calculation:** Response rate is reported according the guidelines of The American Association for Public Opinion Research (2023). AAPOR RR3 was computed using estimated eligibility for unknown cases. The eligibility rate was estimated from the observed ratio of eligible to known contacts.

Table 1: AAPOR Disposition Summary and Response Rates by Survey Mode (APS 2024)

Mode	I	P	R	NC	Inel.	UH	Calls	*e*	RR3	*PR*
Online	1233	153	3157	318	0	0	4861	–	–	25.4%
Fixed	203	32	1557	0	6516	4692	13000	22%	7.2%	–
Mobile	597	86	5362	0	1170	11285	18500	84%	3.9%	–

Notes:
I = Completed interviews; P = Partial completes; R = Refusals; NC = Non-contacts but eligible; Inel. = Ineligible cases; UH = Unknown eligibility because non contact; Calls = Total contact attempts (phone numbers called or invitations sent); e = Estimated proportion of cases of unknown eligibility that are eligible; PR = *Participation rate*.
Estimated eligibility rate is calculated as the observed proportion of eligible cases among all known eligibility outcomes:

$$e = \frac{\text{Eligible}}{\text{Eligible} + \text{Ineligible}}$$

This rate is then applied to the unknown eligibility cases (UH) to estimate how many are likely to be eligible.
RR3 is calculated as:

$$RR3 = \frac{I}{I + P + R + NC + (UH \times e)}$$

Participation rate is defined as: $I/(I + R)$. Online mode has no unknown eligibility cases; thus no estimation was applied.

Data Processing

- **Validation:** Quality checks and internal consistency checks were performed both locally and by the GEM data team.
- **Editing:** Anomalous responses were flagged and dropped; no imputation was applied for item non-response.

Ethics and Confidentiality

- **Informed Consent:** Participation was voluntary and respondents were informed of their rights and the purposes of data collection.

- **Data Protection:** All procedures complied with GDPR. Data is collected and stored under statistical confidentiality provisions, as mandated by Luxembourg's national statistical law.

Dissemination and Access

- **Comparison to Benchmarks:** The sample was weighted to align with national population benchmarks (age, gender, education, etc.).
- **Metadata and Technical Files:** Available via the GEM website and from STATEC Research upon request.
- **Data Access:** Fully anonymised datasets are released to the public three years after data collection. GEM member teams may request access one year after the release of the Global GEM Report. Access to the Luxembourg APS dataset is also possible at STATEC premises under certain conditions.

APS and other official entrepreneurship measures

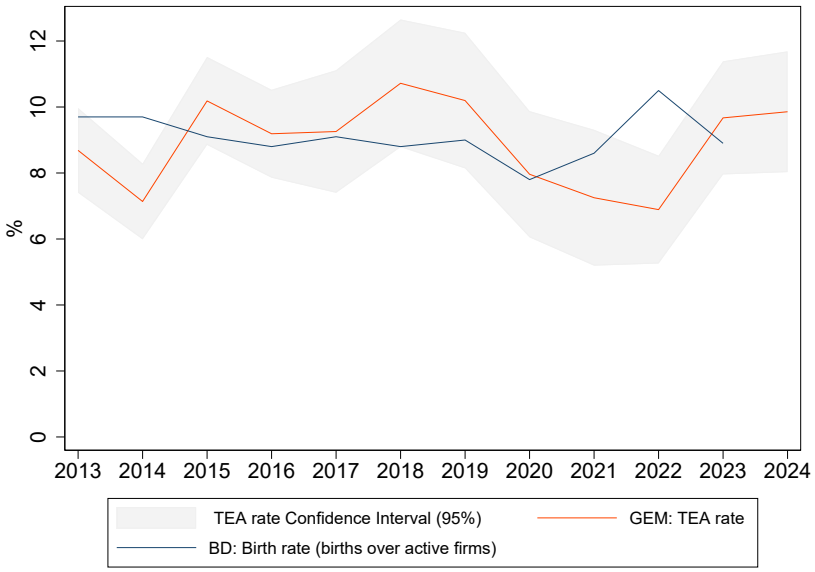
This section compares GEM measures with other entrepreneurship indicators based on official statistics. The aim is to assess how closely the GEM survey captures the underlying entrepreneurial phenomenon in Luxembourg over time.

Figure 1 shows the firm birth rate (blue line) the Total Early-stage Entrepreneurial Activity (TEA) rate (orange line). Birth rate is measured as the number of *new firms* relative to the stock of existing firms and it is based on Business Demography data set.[1] TEA measures the share of *new entrepreneurs* in the resident adult population. The shaded area represents the 95% confidence interval for TEA, that is, a range of values within which the true TEA rate is likely to fall in the population. (For instance, in the most recent available data for 2024, the TEA rate was 9.9% with confidence intervals ranging from 8.0% to 11.7%). The data show a certain alignment of the two indicators, suggesting that the data provide consistent information. As documented in the previous GEM report (GEM Luxembourg, 2023), the series generally shows consistent trends. [2]

[1] BD data for 2013–2022 retrieved from STATEC (see `https://shorturl.at/ylQWf`, and data for 2023 from EUROSTAT (see `https://shorturl.at/Kfr1K`

[2] The methodology has evolved over time (STATEC, 2024), and there is a break in the series in 2022 concerning Sector M – professional, scientific, and technical activities – that covers 1134 new firm birth out of a total of 4747 firms (see `https://shorturl.at/Kfr1K`). Since 2022, the Business Demography data includes enterprises without employees, classified under NACE M – professional, scientific, and technical activities – (STATEC, 2024).

Figure 1: New entrepreneurs and new firms.



Notes: BD = Business Demography; Break in the series of BD in 2022
Source: STATEC BD 2013–2023 and GEM Global APS data 2013-2023.

Figure 2 presents complementary indicators of entrepreneurship: self-employment from the Labour Force Survey (LFS)[3] , national accounts (NA)[4] , and the number of active enterprises from business demography statistics (BD)[5] .To allow comparability, the figure includes the GEM measure of *any business ownership*, which combines TEA and established business rather than the TEA presented in Figure 1.

The measures show are not directly comparable, as they differ in scope and definitions, but together they provide complementary perspectives on entrepreneurship.

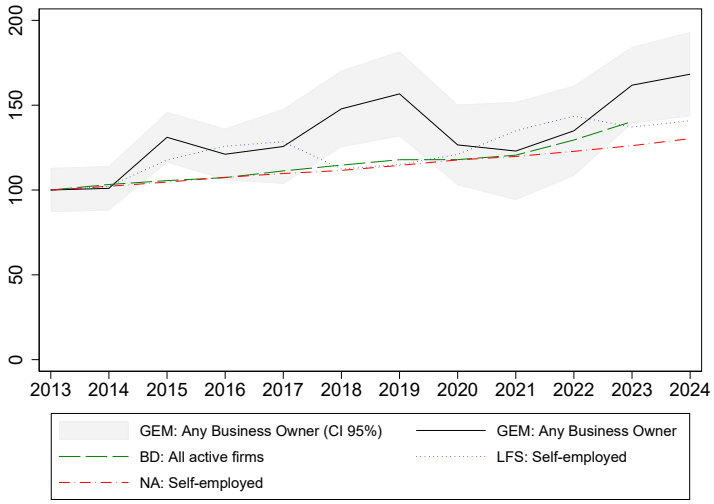
LFS data on self-employment measure individuals' labour market status. National accounts also record self-employment, but within the framework of production and income generation.[6] Business demography statistics track the number of active enterprises and their dynamics. It is important to note that these indicators are not directly comparable with GEM measures and can differ considerably in level as shown in Figure 3. For example, GEM counts individuals, so several entrepreneurs may be involved in starting or managing the same firm. Moreover, self-employed workers represent only a subset of all entrepreneurs.

[3] `https://ec.europa.eu/eurostat/databrowser/bookmark/d5190091-d1ac-413b-af77-a8dfd738aeac?lang=en&createdAt=2025-09-04T17:23:21Z`
[4] `https://ec.europa.eu/eurostat/databrowser/bookmark/749f7626-f2a3-421f-bbca-c5eb3f225658?lang=en&createdAt=2025-09-04T15:45:56Z`
[5] BD data for 2013–2022 retrieved from STATEC (see `https://shorturl.at/026MR`), and data for 2023 from EUROSTAT (see `https://shorturl.at/7LnZQ`).
[6] For differences between LFS, national accounts (ESA2010) and IGSS (Inspection générale de la sécurité sociale), see Eurostat (2010) and STATEC (2025c).

To highlight long-term trends and account for level differences, Figure 2 shows all indicators indexed to 100 in 2013, the year GEM data collection began in Luxembourg. For GEM, 95% confidence intervals are also displayed.

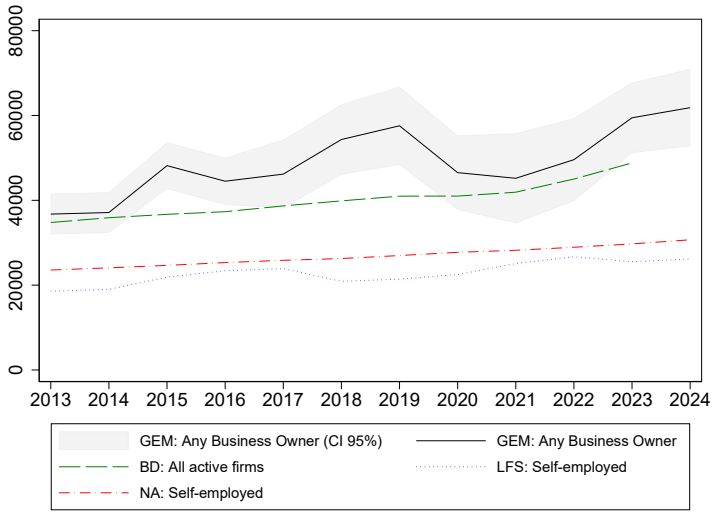
Results show that LFS and GEM measures fluctuate more strongly over time, while national accounts and business demography are more closely aligned. Overall, the indicators are consistent in pointing to a long-term upward trend, confirming that **GEM captures the same broad dynamics as official statistics**, while adding unique insights such as the COVID-related slowdown.

Figure 2: Entrepreneurship trends.(Index, 2013 = 100)



Notes: BD = Business Demography; NA = National Account; LFS = Labor Force Survey
Source: STATEC BD 2013–2023, STATEC NA; STATEC LFS and GEM APS data 2013-2023.

Figure 3: Entrepreneurship trends.(Absolute numbers)



Notes: BD = Business Demography; NA = National Account; LFS = Labor Force Survey
Confidenc interaval of TEA are computed to mantinanthe same ratio
Source: STATEC BD 2013–2023, STATEC NA; STATEC LFS and GEM APS data 2013-2023.

NES Study Information

- **Purpose and Objectives:** The NES complements the APS by assessing the national entrepreneurial ecosystem through the perspectives of recognised experts. It provides information on Entrepreneurial Framework Conditions (EFCs) and feeds into the construction of the National Entrepreneurship Context Index (NECI).
- **Target Population:** Experts with extensive knowledge of entrepreneurship and innovation in Luxembourg, including policymakers, academics, practitioners, and financial actors.
- **Survey Design:** Cross-sectional expert survey conducted annually in parallel with the APS.
- **Legal Basis:** The survey is voluntary and conducted under the responsibility of STATEC Research, in compliance with national statistical confidentiality rules and GDPR.

Sampling

- **Sampling Design:** Convenience sampling consistent with GEM global methodology.
- **Expert Categories:** The invited experts included policymakers, academics, entrepreneurs and practitioners, business support organisations, and financial actors.
- **Sample Size:** A total of 170 invitations were sent, and 36 experts completed the survey. This corresponds to a *participation rate* of approximately 21%.

Data Collection

- **Mode:** The survey was self-administered online. Respondents who did not complete it were later contacted by phone, and some completed the survey via telephone.
- **Fieldwork Period:** Conducted from 01/07/2024 to 26/09/2024
- **Languages:** The questionnaire was available in French and English.
- **Vendor:** Fieldwork was carried out by *Opinomètre* on behalf of STATEC Research.
- **Instruments:** Harmonised GEM NES questionnaire covering Entrepreneurial Framework Conditions (EFCs).

Response

- **Reminders:** Up to five reminders were sent to maximise participation.
- **Response Rate:** 36 of 170 invited experts completed the survey (21%).
- **Non-response:** As in other NES rounds, non-response bias cannot be ruled out but the final achieved sample ensures a diversity of perspectives across domains.

Data Processing

- **Validation:** Data were checked by the GEM global team for consistency with international standards.
- **Editing:** Anomalous or incomplete responses were reviewed; qualitative comments were analysed alongside quantitative ratings.

Ethics and Confidentiality

- **Informed Consent:** Experts were informed of the purpose of the study and participation was voluntary.
- **Data Protection:** All procedures complied with GDPR and Luxembourg's national statistical confidentiality rules.

Dissemination and Access

- **Use of Results:** NES results provide contextual interpretation for APS findings and form the basis for constructing the NECI.
- **Metadata and Technical Files:** Available via the GEM website and from STATEC Research upon request.
- **Data Access:** Fully anonymised datasets NES datasets are released to the public three years after data collection. GEM member teams may request access one year after the release of the Global GEM Report. Access to the Luxembourg APS dataset is also possible at STATEC premises under certain conditions.

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