

Report

# Startups and Scaleups in the Oslo Region - 2022



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## Preface

On behalf of Oslo Business Region, Menon Economics has mapped startups and scaleups in the Oslo region and their contribution to the economy. This report provides an overview of startups and scaleups in the region and their contribution to employment and value creation. The work has been conducted by Per Fredrik F. Johnsen as project leader and Maja Olderskog Albertsen as project member. Leo Grünfeld is the responsible partner.

Menon analyzes economic issues and provides advice to companies, organizations and authorities. We combine economic and commercial expertise in fields such as industrial organization and competitive economy, strategy, finance, organizational design and social profitability. We use research-based methods in our analyses and work closely with leading academics within our field of work.

We thank Oslo Business Region for an exciting project. We would also like to thank the reference group consisting of Åsmund Lunnan Bjørnstad (Kongsberg Innovasjon), Eirik Nerdal (Startup Norway), Ann E. Aasen (BI), Katrine Vetlesen (Oslo Science City) and Elin Mathiesen (Abelia) for good discussions and valuable input during the process, as well as Dealroom for sharing their data. The authors are responsible for all content in this report.

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November 2022

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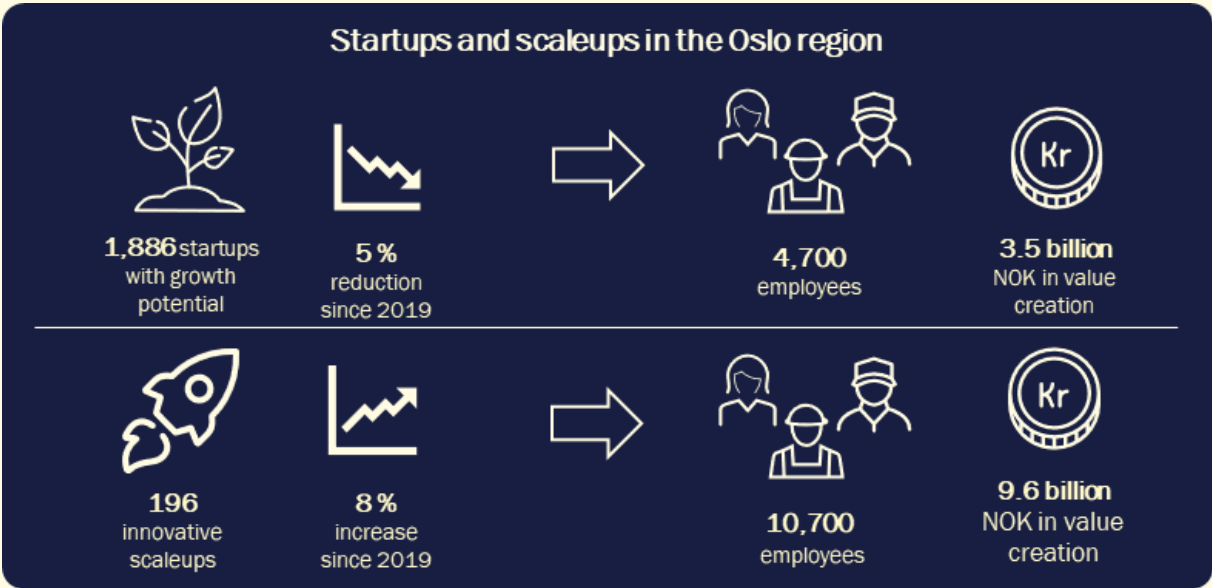
# Summary

The purpose of this report is to provide an overview of startups and scaleups in the Oslo region and their contribution to value creation and employment. The report builds on a previous study for Oslo Business Region in 2021. The analysis is based on data for Norwegian enterprises with register data from Menon's historical database of accounting information for Norwegian companies, combined with other sources used to identify innovative companies who either have a potential for growth or have achieved growth.

Based on our definitions, we find 1886 startups, a reduction of five percent from 2019. Of these, 275 are identified as capital and R&D intensive and are considered to have particularly high growth potential. We expect an increase in the number of startups in the coming years, after particularly high growth in newly established enterprises during the pandemic.

Furthermore, we find 196 scaleups, an increase of eight percent since 2019. Startups and scaleups in the Oslo region employ 15,400 people and have a value creation of NOK 13 billion, which accounts for two percent of value creation in Oslo. Startup and scaleups accounted for 12 percent of net job growth in the Oslo region since 2011. The majority of startups, and scaleups in particular, are located in Oslo. In addition, there are several companies in the large neighboring municipalities of Bærum and Lillestrøm. The figure below summarizes some of the main findings in the report.

Figure 1: Summary of findings for startups and scaleups in the Oslo region in 2021



The largest number of scaleups is found in the ICT industry and knowledge services, with 77 and 52 companies respectively. In addition, the region produces many scaleups in health and life sciences (15), fintech (11) and energy and climate tech (8). In addition, there is an emergence of companies in technology markets where there have not been that many companies in the Oslo region previously. This includes urban development and proptech, edtech and e-sports, which in total have 13 scaleups.

International comparisons indicate that Oslo is still lagging behind the other Nordic capitals in terms of the number of both startups and scaleups. At the same time, we can see that in recent years Oslo has been catching up to both Stockholm, Copenhagen and Helsinki, especially with regards to innovative scaleups. International studies show that the startup ecosystem in Oslo is receiving more and more attention and is perceived as attractive internationally. Norwegian startups and scaleups are attracting increasing amounts

of external capital, and this particularly applies to the Oslo region. In recent years, there has been a flourishing of many new investment funds that provide capital to both startups and scaleups. In addition, there has been an increase in seed and venture capital supplied to startups and scaleups from private equity.

# 1 Introduction

In the last few years, the culture for entrepreneurship in the Oslo region has changed, with great development of the ecosystem around startups and scaleups, in addition to a maturing of the entrepreneurial culture. This report provides a status of, and insight into, the development in the number of startups and scaleups in the region. In addition, we highlight these companies' contribution to value creation and employment.

Entrepreneurship is an important source of innovation and growth in the economy. Successful and innovative startups are important contributors to this development, often through radical innovations. In addition to contributing to growth and innovation, the entrepreneurs play an important role when it comes to creating jobs. Almost two of three new jobs in the private sector are created in newly established companies.<sup>1</sup> Amongst these, a small share of scaleups are responsible for the lion's share of newly created jobs. Risk-taking entrepreneurs who create innovative companies are helping to shape the Norwegian business and industry sector in the years to come.

This report identifies innovative startups with growth ambitions, and scaleups that are considered to be knowledge-intensive and have further growth potential. The report will also highlight the contribution of startups and scaleups to the region in the form of jobs created, value added and other social values. At the same time, it will contribute to new and updated insight into the region. The report is produced annually and will follow the Oslo region's development from year to year.

The report is structured as follows: Chapter 2 introduces definitions and method before we present the population of startups and scaleups identified in the Oslo region. Chapter 3 presents these companies' contribution to employment and value creation over time, and Chapter 4 deals with developments in access to capital for companies in the startup and scaleup phase. A more detailed explanation of data sources and method can be found in the appendix.

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<sup>1</sup> Reve (2017). Endelig rapport fra MIT REAP South West Norway.

## 2 Startups and scaleups in the Oslo region

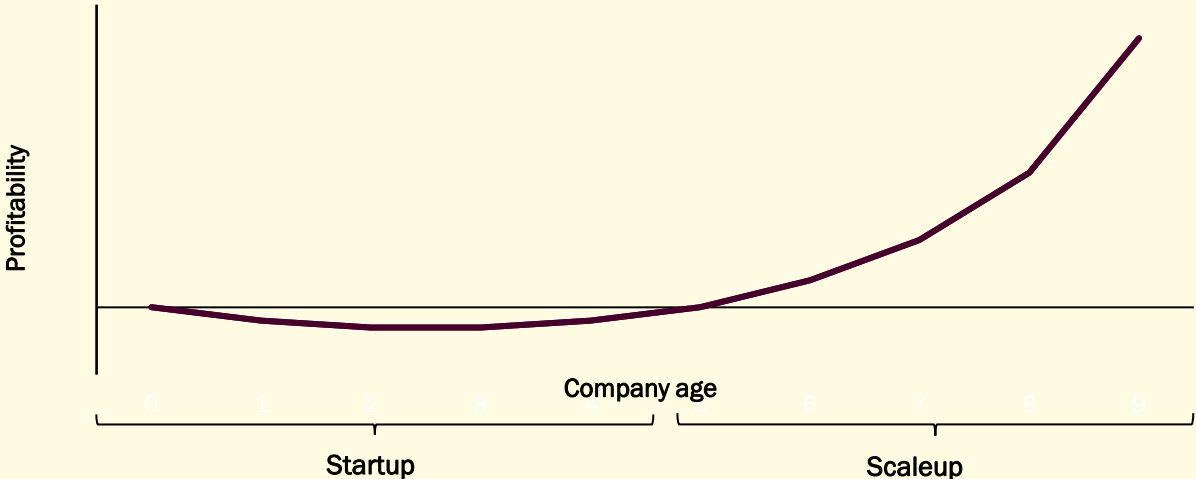
Today, the Oslo region is home to nearly 1,900 startups and almost 200 scaleups. Most are located within the City of Oslo, especially scaleups are concentrated there. Compared to the other Nordic capitals, Oslo has fewer scaleups, but in recent years Oslo has managed to narrow part of this gap as the startup ecosystem becomes more mature. The industries that stand out with many startups in the region are technology companies, health care and life sciences and knowledge services. These are also the dominant industries among scaleups.

Startup and scaleup are terms that are used rather frequently, but for which there is no universal definition. This means that identification and counting of such companies tends to be done in different ways in different analyses, and the definitions are chosen based on their relevance for the analysis in question.

In our report, we apply a definition which enables us to identify relevant companies in the Oslo region in terms of potential for growth and innovation. These are the companies we believe to be the foundation of the future economy not only of the region, but also Norway as a whole.<sup>2</sup>

There is a fundamental difference between a startup and a scaleup. We have attempted to illustrate this difference in Figure 2 below. The figure shows the development of profitability in a startup which is maturing, which often takes the shape of a 'J'. Startups with growth potential require both financial capital and competent human capital to develop their products, with the consequence that in the short term they will usually run a deficit. These investments lay the foundation for future growth and value creation.

Figure 2: The development in profitability of j-curve companies



As companies commercialize products and scale up their operations, they enter a growth phase. Investments pay off in the form of increased revenues and improved profitability. Over time, successful startups will turn into scaleups that get returns from their investments. Due to the conceptual difference between companies in the two different phases, they are treated separately in this analysis.

<sup>2</sup> Our definitions are largely based on characteristics that are identifiable, using accounting data and company information provided by the Register of Company Accounts in Brønnøysund in addition to other public sources. This way, our definitions are operational, enabling us to count the number of companies that sort under the alternative definitions.

## 2.1 Startups with growth potential in the Oslo region

### 2.1.1 The number of startups in the region has fallen since 2019

Identifying startups with potential for growth is a difficult exercise in such an early phase. Newly established companies lack a track record, and there is no register that provides information about entrepreneurs or their ambitions. The companies we want to identify among the great number of newly established enterprises may be both knowledge-intensive, capital-intensive and innovative startups. Due to the heterogeneity of startups within different industries, we apply several criteria to identify characteristics of startups with growth potential. The criteria to identify startups are summarized in the textbox below.<sup>3</sup>

#### Definition of startups with growth potential

Startups are from 2-5 years of age since the first year of economic activity<sup>4</sup>, and meet at least one of the following criteria:

- a) Knowledge intensive: the company is categorized in an industry where more than 33 percent of employees typically have a higher education level than a bachelor's degree
- b) Innovative: the company has received R&D tax credits (SkatteFUNN) at least once during the first 5 years
- c) J-curve: the company has had an operational loss that amounts to twice the accumulated revenues in the first 2-5 years, and registered wage costs
- d) Capital intensive: the company has increased its share capital by at least NOK 100,000

Based on this definition, we have identified 1,886 startups in the Oslo region. 99 percent of these are within knowledge-intensive<sup>5</sup> NACE-codes (criterion a). 9 percent have qualified for SkatteFUNN (criterion b)<sup>6</sup>. About five percent of the startups are j-curve companies (criterion c), while two percent have raised additional capital (criterion d).

The number of startups in the Oslo region has fallen by five percent since 2019, which was the last year for which accounting data were available at the time the previous report was written.<sup>7</sup> The historical development in the number of startups that fall under the definition is illustrated below in Figure 3.

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<sup>3</sup> Spin-outs from established actors in the economy are excluded, as they do not fall under the definition of startup as defined in this report.

<sup>4</sup> The first year of economic activity is defined as the first year of registered revenues or wage costs.

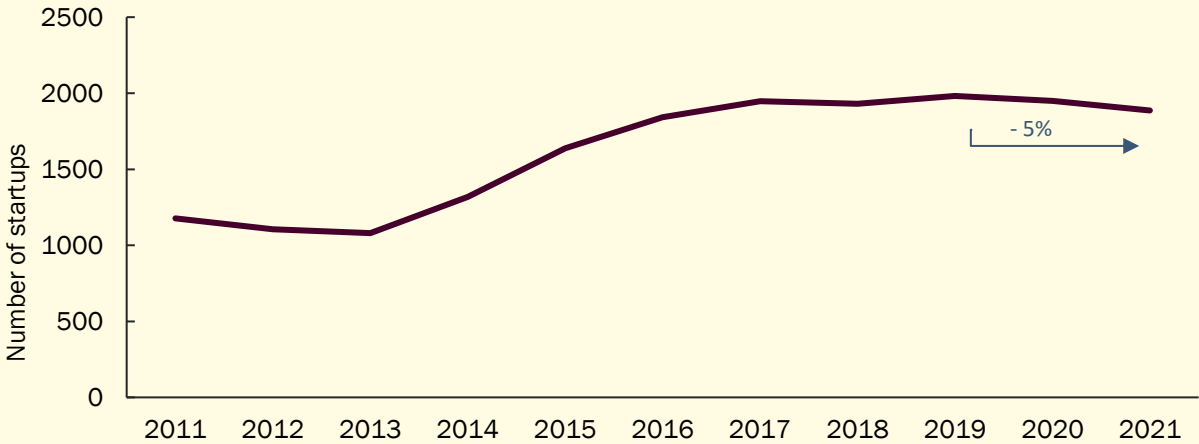
<sup>5</sup> See complete list of knowledge intensive industries (NACE-codes) in the appendix Industry categorization.

<sup>6</sup> SkatteFUNN is a rights-based tax credit scheme for companies that invest into R&D.

<sup>7</sup> Menon (2021): Startups and Scaleups in the Oslo Region



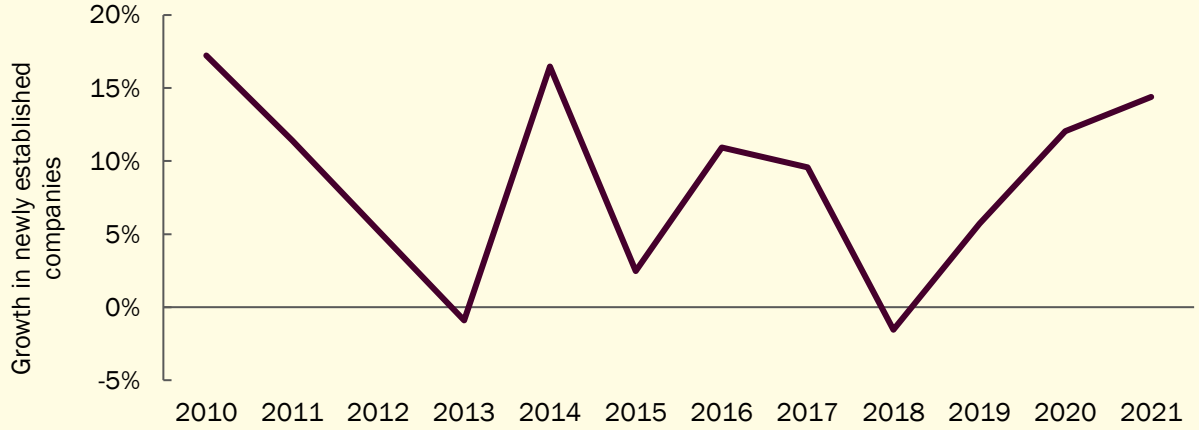
**Figure 3: Development in the number of startups in the Oslo region. Source: Menon Economics**



In the period from 2013 to 2017 there was an increase in the number of startups. In the following years, the growth leveled off, until a preliminary peak in 2019 with around 2,000 companies. From 2019, there has been a moderate fall in the number of startups, which must be seen in the context of a stagnation in the growth of newly established companies in Oslo in the years 2018 and 2019.

New enterprises are the basis for the innovative startups. In 2018 and 2019, the Norwegian economy did well and there was low growth in the number of newly established companies. This has subsequently led to fewer companies that are defined as startups in the region in 2020 and 2021. Figure 4 shows the growth in the number of newly established companies in Oslo from year to year.

**Figure 4: Growth in the number of newly established companies in Oslo from 2010-2021. Source: Statistics Norway**

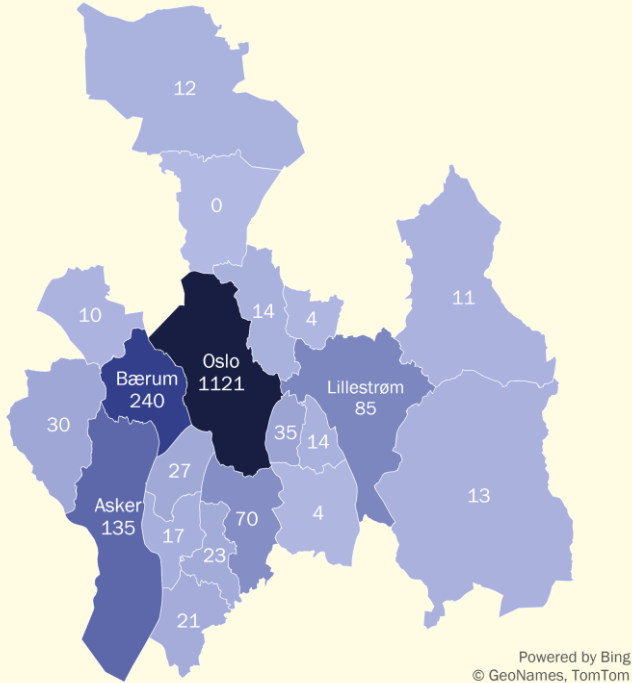


Growth in the number of newly established companies picked up in 2021, which is probably due to a period of increased unemployment, many temporary lay-offs and uncertainty during the pandemic. The pattern of more new establishments in bad economic times, and correspondingly fewer new establishments during downturns, repeats itself. A high rate of establishment for new businesses during the pandemic years will probably lead to an increase in the number of startups in the next couple of years, as these companies will then be 2 years of age or older and fall within the definition used here. There are a number of other factors that influence the development, but a higher rate of establishment makes it likely that there will be more innovative startups with growth ambitions in the coming years.

60 percent of startups are located in the City of Oslo. As the largest city in the country, Oslo is the leading business centre and the centre of gravity in Norway’s largest job market. In addition, there is an ecosystem

with research institutions, innovation enterprises, clusters and professional investors. The map in figure 5 shows the distribution of startups in the Oslo region.

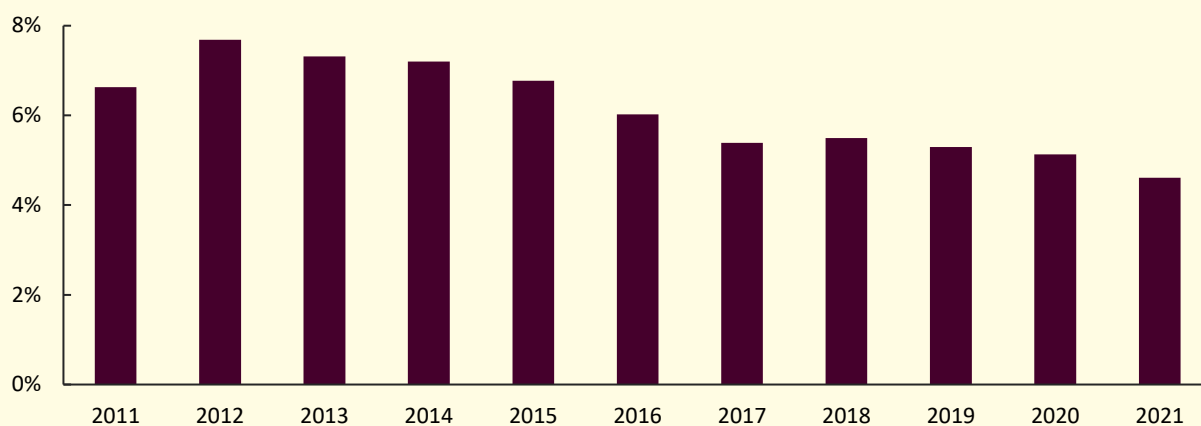
**Figure 5: Startups in the Oslo region in 2021, distributed across to municipalities. Source: Menon Economics**



Furthermore, we see that the municipalities of Bærum, Asker and Lillestrøm are also successful in fostering startups. These are some of the country’s most populous municipalities, with an innovative business and industry sector and strong knowledge environments. In 2021, there were 236 startups in Bærum, 132 in Asker, and 85 in Lillestrøm. In total, 25 percent of all startups in the Oslo region were located in these three municipalities. The remaining 15 percent of startups are spread out over the other 16 municipalities in the region.

Not all of these startups originate in the Oslo region. Historically, around 6-8 percent of the startups in the Oslo region have been established outside the region and then relocated to the Oslo region shortly after. Most of these startups relocate from the biggest cities, Bergen, Trondheim and Stavanger. In addition, some of the companies move from densely populated areas along the Oslofjord and into the Oslo region proper. Figure 6 shows how the proportion of startups that have moved to the Oslo region has developed over time.

Figure 6: Share of startups in the Oslo region that have relocated from elsewhere. 2011-2021. Source: Menon Economics



In recent years, the share of startups that have moved from elsewhere to the Oslo region has been falling, and in 2021 only five percent of the startups in the area were relocated from elsewhere. This means that the long-term trend of growth in the number of startups is not due to more and more companies deciding to relocate to the Oslo region.

Parts of the decrease in 2020 and 2021 may be due to the corona pandemic, making the capital region less attractive to entrepreneurs. Stricter restrictions in Oslo compared to other areas in the country made it less attractive for the population to move to Oslo, and this dynamic may have been the same for the business and industry sector. As the population has started to flow back to the Oslo region in the wake of the pandemic, it is possible that some startups from the rest of the country will also want to relocate to Oslo in the coming years.

### 2.1.2 Capital and R&D intensive startups

Most of the startups are identified by belonging to a knowledge-intensive industry<sup>8</sup>. Norway is a country with an overall high level of education, and therefore many industries are defined as knowledge intensive.

To focus more narrowly on innovative startups with growth ambitions, here we only use the criteria for innovative (criterion b), j-curve (criterion c) and capital-intensive companies (criterion d). By omitting the criterion for knowledge-intensive startups, we exclude the clearly broadest and least precise indicator for identifying innovative startups with growth ambitions.

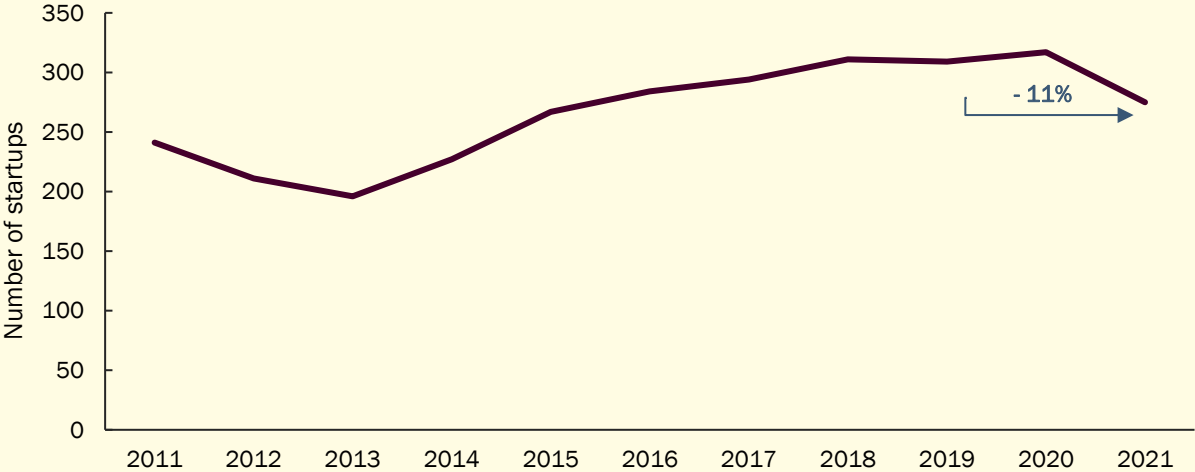
By applying the three criteria mentioned above, we identify 275 startups. These startups are either capital intensive<sup>9</sup> and/or R&D intensive<sup>10</sup>. These are precise indicators for both growth ambitions and growth potential. The development in the number of startups based on these indicators is illustrated in the figure below.

<sup>8</sup> I.e., an industry where more than 33 percent of employees has a higher education than a bachelor's degree.

<sup>9</sup> Capital intensive companies need a large amount of capital as input in production. They will typically need considerable investments in development and/or plants and machinery to produce products, often financed by external capital.

<sup>10</sup> Companies with considerable R&D efforts in the development of products.

Figure 7: Development in the number of startups in the Oslo region according to criterion b, c and d. Source: Menon Economics



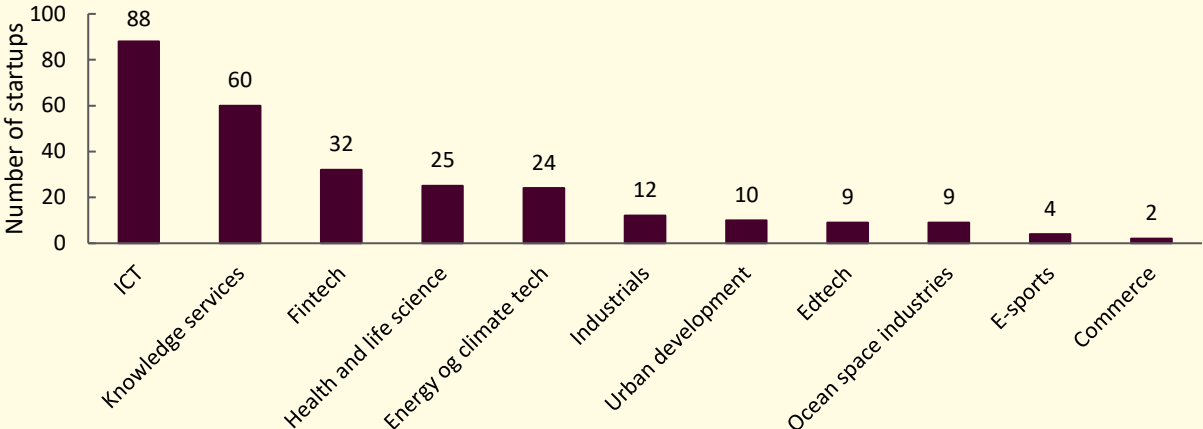
With this approach, we find a reduction in the number of identified startups by 11 percent since 2019. From 2013-2020, there has been overall growth in the number of startups with growth ambitions, before the decrease in 2021. In particular, there are fewer companies that are identified as innovative startups through the criterion of having active SkatteFUNN<sup>11</sup> projects in 2021. It is important to note that there was a general decrease in the number of SkatteFUNN-projects during the pandemic, which may be due to the fact that fewer companies had capacity for R&D projects in this period.

### 2.1.3 Startups represent a broad range of industries

The Oslo region is home to a number of research communities and startup environments that have expertise within different fields. As a result, startups are emerging within a number of industries where Norway and Oslo have traditions that go way back in time, but also in other areas which are newer in the context of Norwegian business and industry. For the 275 startups that are either capital or R&D intensive, we have mapped what industries they belong to. The basis for the industry categorization is a mapping of the value chains the companies deliver to in those cases where their product is targeted at a clearly identifiable market. The figure below shows how the startups are distributed according to industries.

<sup>11</sup> SkatteFUNN is a rights-based tax credit scheme for companies that invest into R&D.

**Figure 8: Startups according to industry. Excluding companies that only qualify by way of belonging to a knowledge-intensive industry. Source: Menon Economics**



The figure shows that the ICT is the industry with the most startups. The ICT industry includes a broad range of activities, and covers technology companies that supply SaaS<sup>12</sup>, semiconductors, hardware, IT consultants and other software. Among the startups in the industry we find companies such as Graphiq Technologies, which supplies a wide range of specialist expertise in technology-driven design and digital communication. Furthermore, there are 60 startups within knowledge services, which includes the provision of professional services, requiring specialist expertise and often also considerable technological knowledge. Here you will find companies such as the advertising technology company Cavai and Sky of Norway, which supplies IT tools for interior designers.

Within Fintech, there has been an emergence of startups that have received considerable attention. Dune Analytics in particular stands out here, which became a unicorn<sup>13</sup> in record time in a Norwegian context, and with only 16 employees. Dune Analytics is a data platform for cryptocurrency analytics. Other companies in the industry are Kredd, ZTL Payment Solutions and Favrit. Within health care and life sciences, we also find a number of companies that have received a lot of attention, such as the biotech companies Hubro Therapeutics and Arxx Therapeutics.

An area that receiving more and more interest is the field of energy and climate tech, both because energy is a scarce good and the need for a transition to renewable energy sources. Authorities all over the world have ambitions to channel large amounts of capital towards solutions that promote the green transition, so this is a field where considerable investments will be made in the years to come.<sup>14</sup> The Oslo region is known as a leader within sustainability, not only with regards to the city space and planning, but more and more also within the startup ecosystem, which is perceived as specialized within the energy transition.<sup>15</sup> Within energy and climate tech, we find e-Motive Technology, which supplies expertise to manufacturers of electric vehicles, and Wind Catching Systems, which develops technology for floating offshore wind.

<sup>12</sup> Software as a Service

<sup>13</sup> A unicorn is an unlisted, privately owned company that is valued at more than USD 1 billion.

<sup>14</sup> Nærings- og fiskeridepartementet. Veikart Grønt Industriløft <https://www.regjeringen.no/contentassets/1c3d3319e6a946f2b57633c0c5fcc25b/veikart-for-gront-industriloft.pdf>

<sup>15</sup> Moonen, T., Nunley, T., Gille, B., & Ford, C. (2022). Oslo: State of the city. The Business of Cities Group

In addition, we see startups emerging within areas where Oslo has not traditionally had many startups earlier. This applies to both urban development and mobility, education technology and e-sport. One example within urban development is the startup Unloc, which builds infrastructure for access control to buildings. Memolife (Memogroup) has created learning technology where they combine research and practice to develop gamified solutions for rapid learning. The e-sports company Playfinity develops games with the aim of making physical activity attractive to young people.

#### In focus 1: Urban development

Innovation systems within both proptech and mobility are growing. StartupLab mobility have, together with The Institute of Transport Economics, established Mobility Test Arena Oslo: A vital initiative to strengthen entrepreneurship. The city of Oslo is a leader when it comes to green mobility and is thus suitable as a test arena for technology within the field.

New promising companies are emerging from the ecosystem, such as Disruptive Engineering, nClude, Maritime Optima and e-Motive Technology. Since 2016, investments in startups and scaleups have increased from EUR 12 million to 58 million. Xeneta, a company within benchmarking and analysis of freight rates within shipping and aviation, has raised more than a half billion NOK in previous fundraising rounds.

Proptech is another field within urban development with strong growth. Clusters like Proptech Norway and Proptech Innovation are gathering forces for the ecosystem. Propely, Varig and Defigo are examples of companies with great potential within proptech. Startups and scaleups who supply technology and services to the real estate industry received EUR 58 million in 2021. This includes funding rounds for companies like Unloc, QiSpace and Soundsensing. In comparison, companies within proptech attracted only EUR 12 million in 2016.

## 2.2 Innovative scaleups

### 2.2.1 Number of scaleups in the Oslo region continues to increase

As startups scale up production and mature, they move into the next phase: the scaleup phase. These fast-growing companies are important contributors to both job creation and value creation. Scaleups contribute by creating knowledge-intensive jobs and innovative goods and services. Norway is a small, open economy, and for many companies the growth potential is related to export markets. This also applies to Norwegian scaleups.

Unlike startups, scaleups have a track record to show for. This enables us to identify scaleups based on accounting data and their development. According to the OECD, a scaleup is defined as a company that has grown by a minimum of 20 percent annually over a three-year period and that had at least ten employees at the beginning of this period.<sup>16</sup>

Here we want to further narrow the definition to capture those companies which have further growth potential, and which are innovative, or are either knowledge- or technology-driven. To identify these scaleups, we use a selection of criteria, in addition to the growth criteria of the OECD. We require that the company is either capital-, knowledge- or R&D-intensive. The operationalization of these requirements is summarized in the text box below.

#### Definition of innovative scaleups

A scaleup has grown by at least 20 percent annually over a three-year period, had at least ten employees at the start of the period, and meets at least one of the following three criteria:

- a) Knowledge intensive companies: the company is categorized as belonging to an industry<sup>7</sup> where more than 33 percent of the employees have a higher education than a bachelor's degree
- b) Innovative or R&D intensive: the company has received R&D tax credits (SkatteFUNN) at least once
- c) Capital intensive: the company has raised new share capital of at least NOK 1 million, or has received investments from seed or venture capital funds

According to our definition of a scaleup, we have identified 196 scaleups in the Oslo region in 2021. 92 percent of these scaleups are knowledge-intensive (criterion a), 59 percent are innovative (criterion b), and 46 percent have increased their original share capital by at least NOK 1 million or have received investments from seed or venture capital funds (criterion c).

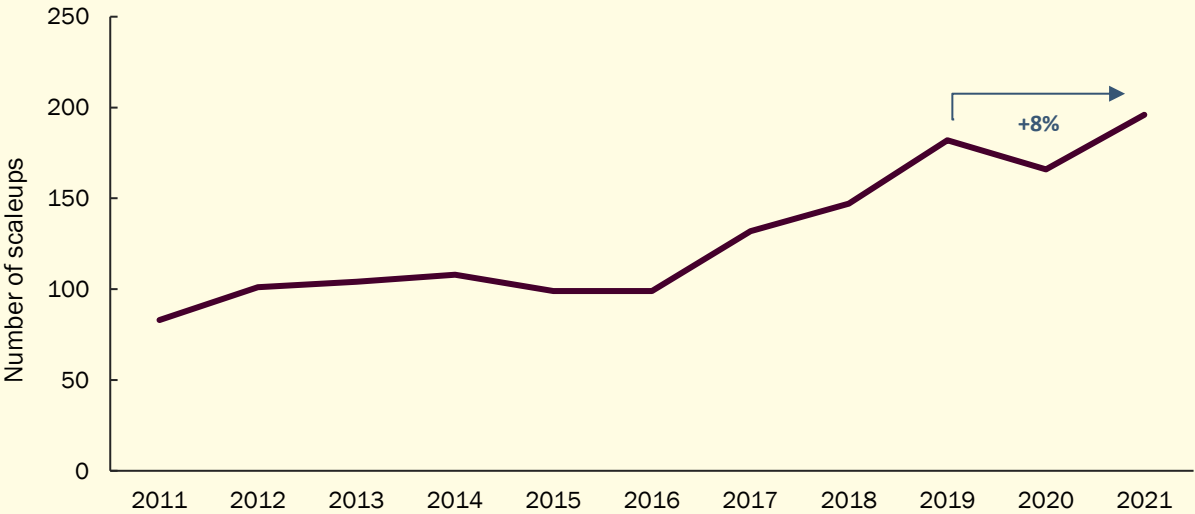
Over time, there has been significant growth in the number of innovative scaleups in the Oslo region. Since 2016 alone, their number has almost doubled. After strong growth from 2016 to 2019, there was a reduction in the number of companies in 2020. In 2021, activity in the economy picked up again and the number of growth companies saw an upswing. Since the previous peak in 2019, the number of scaleups has grown by eight percent. The figure below shows the development since 2011.

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<sup>16</sup> Growth is measured both in terms of sales growth and growth in the number of employees. A company can thus be defined as a scaleup either based on sales growth, growth in the number of employees, or both.

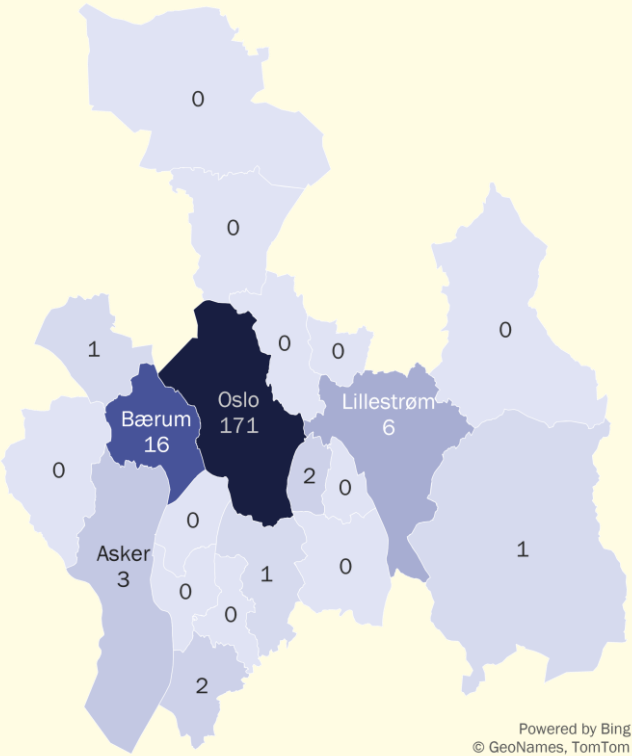
<sup>17</sup> See complete list of knowledge intensive industries (NACE-codes) in the appendix Industry categorization.

Figure 9: Development in the number of scaleups in the Oslo region. 2011-2021. Source: Menon Economics



Compared to the population of startups in the Oslo region, scaleups are far more concentrated in the City of Oslo. Figure 10 shows the distribution of scaleups in the municipalities in the area. In Oslo there are 171 scaleups, almost 85 per cent of the population. Outside of Oslo, most scaleups are located in either Bærum or Lillestrøm.

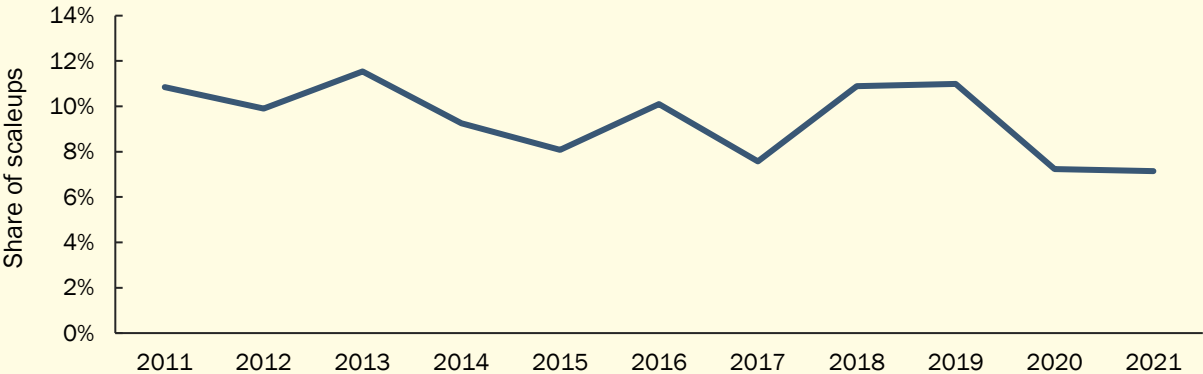
Figure 10: Scaleups in the Oslo region, distributed according to municipality. Source: Menon Economics



When companies grow and need to expand their workforce, it is natural to choose a location in a large city where access to talent is best. This also helps to explain why a higher proportion of scaleups have moved to the Oslo region compared to startups. The figure below shows the development in the share of scaleups that previously have been located outside the region.



**Figure 11: Share of scaleups in the Oslo region that originally were located outside the region. Source: Menon Economics**



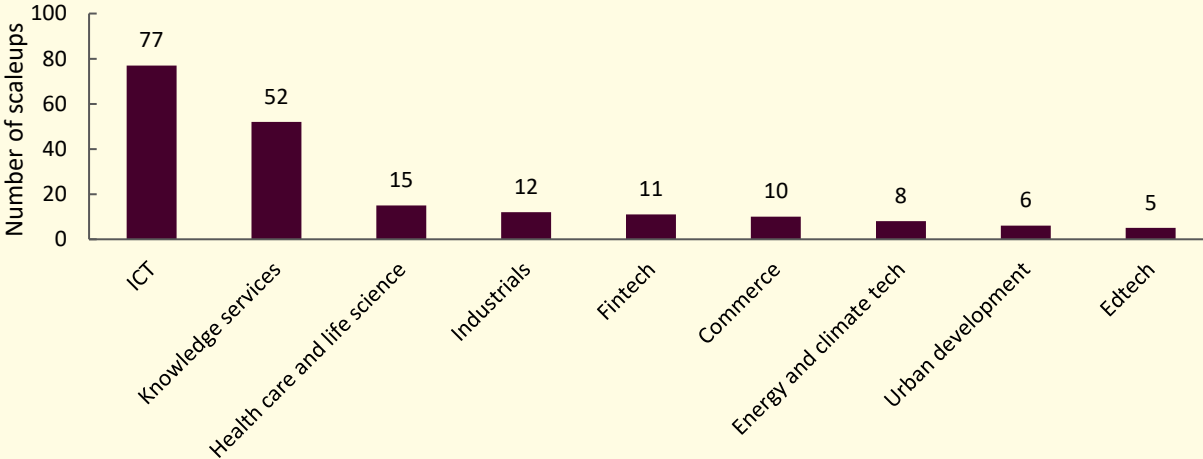
The increase in the number of scaleups is not due to an increasingly high share of these companies relocating from the rest of the country. On the contrary, there was a fall in the share of scaleups that moved to the Oslo region in 2020 and 2021. This may be related to the pandemic and increased opportunities for remote work.

**2.2.2 Scaleups are concentrated within ICT and knowledge services**

The Oslo region is the largest market for the Norwegian service industry, combined with a population with good ICT-skills that makes up the labour market. Scaleups are spread across a wide range of industries, but ICT industry and knowledge services stand out as the industries with the most scaleups. A possible explanation for this is that there are many service providers in these categories that deliver services in the national market to start with, and they are not necessarily dependent on gaining access to export markets in order to achieve significant revenue growth. At the same time, there are a number of companies that make their mark internationally from the outset, for example Kahoot!.

Figure 1 shows how scaleups were distributed according to industry in 2021. ICT and knowledge services<sup>18</sup> are the industries that dominate the scaleup population, with 77 companies (39%) and 51 companies (26%) respectively.

**Figure 1: Scaleups according to industry in 2021. Source: Menon Economics**



<sup>18</sup> See the appendix for an overview of the industries that are categorized as knowledge services.

In the ICT industry, we find a wide range of companies, from IT consultants such as Crayon to the inventors of the paper tablet Remarkable, and developers of video call solutions such as Pexip. Crayon's turnover in 2021 was more than NOK 3.2 billion, and the company had 332 employees. In May 2022, Remarkable was valued at one billion dollars, and thus officially became a unicorn. In the knowledge services industry, we find architectural firms, engineering consultants, recruitment companies, business advisers and other types of consultants and advisors. In this category we find companies such as Snøhetta, Iterate and View Ledger.

Other growth industries in the Oslo region include health care and life science, fintech, energy and climate tech, urban development and edtech. No Isolation has 40 employees and develops telepresence robots to prevent loneliness in ill people and in 2022 raised 90 million NOK to finance further growth.

Within energy and climate tech, there is N2 Applied, which has developed a method for the production of environmentally friendly fertilizer for agriculture, and Kanfa Energy, which offers solutions for carbon capture and storage. Attensi has established itself in the field of learning technology with game-based 'simulearnings' where it has become a global leader. They have 230 employees and are expanding internationally. In 2022, Attensi won the award for best educational technology in the commercial sector in the *Learning Technologies Awards 2022*.

## In focus 2: Energy and climate tech

The world is facing enormous human made climatic challenges. More and more companies are established with new technology as a response to the green transition ahead. In addition to strong research institutions at UiO, SINTEF, IFE and NGI, there is a growing ecosystem within several value chains in the energy field. H2Cluster, The Norwegian Solar Energy Cluster and NCE Smart Energy Market are examples of clusters working with renewable energy.

The Oslo region has innovations strength on the field today as well. We find 24 startups and 6 scaleups within energy and climate tech. Examples of notable companies in energy and climate tech are Wind Catching Systems, who develops technology for floating offshore wind. Another example is Otovo, which is a leading marketplace for solar cells and batteries in the European market.

Within the industry we find companies within a broad spectre of climate technologies. Empower uses blockchain to track plastic and plastic waste management globally, and Watter develops software for purchase and sale of surplus energy, which is used secure access to power for refugees in Jordan, among other things. Carbon capture is another field which attracts attention, and the scalup Kanfa produces solutions for both onshore and offshore activity.

Companies in the industry attracts more and more capital. They raised a total of EUR 108 million in 2021, up from EUR 8 million in 2016. Other companies who raised significant amounts of capital are Ocean Sun, who develop technology for floating solar power and N2 Applied who has developed a method for production of environmentally friendly fertilizer for use in agriculture.

### 2.2.3 Oslo's scaleup environment is catching up with its neighbours

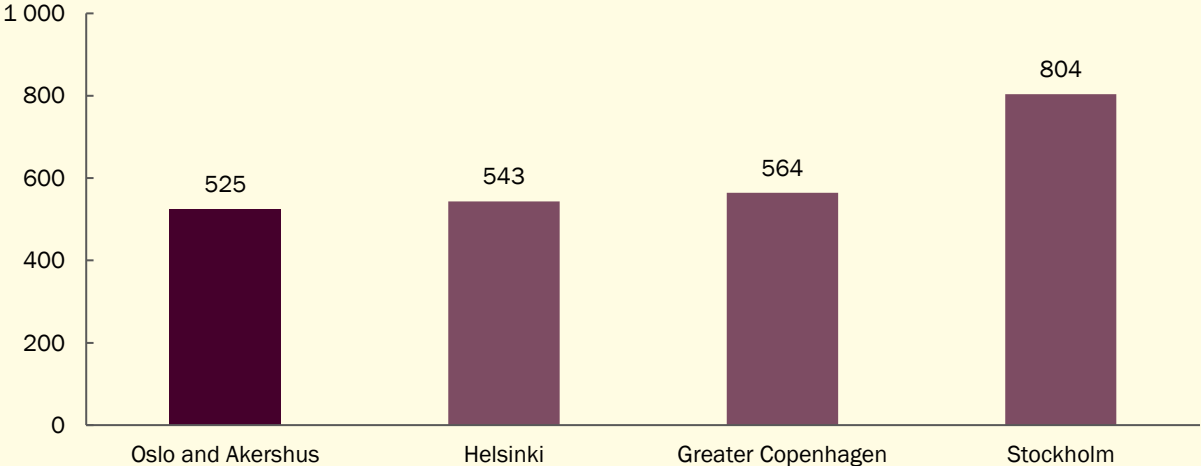
The number of scaleups in the Oslo region has increased, and the region is catching up with its neighbours in the Nordics. Stockholm has long been known as an important European arena for entrepreneurship. Nordic Innovation<sup>19</sup> uses statistics to identify scaleups in the Nordics.<sup>20</sup> Their definition of scaleups is quite similar to ours, but there are three main differences in method which mean that Nordic Innovation identifies more scaleups than we do. We look at the *number* of employees rather than at full-time equivalents. In addition,

<sup>19</sup> An organization working to promote entrepreneurship and innovation in Nordic companies.

<sup>20</sup> Nordic Innovation (2022). Scale-ups in the Nordics 2020

according to our method it is not sufficient to 'only' have achieved growth. It is also necessary to fulfill the criteria to be identified as a knowledge-, capital- or R&D-intensive scaleup. Finally, Nordic Innovation looks at all of Oslo and what used to be Akershus county, while we only include certain parts of Akershus in the Oslo housing and labour market region. Figure 13 shows the number of identified scaleups in the Nordic capitals for 2020, based on Nordic Innovation's approach.

**Figure 2: Number of scaleups in Nordic capitals in 2020. Source: Nordic Innovation, processed by Menon**



Nordic Innovation finds that Oslo and Akershus has 525 scaleups, just behind Helsinki and Copenhagen. Stockholm however has around 50 percent more scaleups than its Nordic neighbours. In 2019, Nordic Innovation carried out a similar analysis, but at that time far fewer scaleups were identified in Oslo and Akershus compared to Copenhagen and Helsinki.<sup>21</sup> The differences between Copenhagen, Helsinki and Oslo have also been erased to a large extent, which indicates that the increase in scaleups that we find in Oslo has not happened in the other Nordic capitals in recent years. Stockholm is still clearly ahead of the other capitals.

<sup>21</sup> Nordic Innovation (2019). Scale-ups in the Nordics 2017

## 3 Startups' and scaleups' contribution to growth

In 2021, startups and scaleups in the Oslo region contributed NOK 13.2 billion in value creation. In addition, 15,400 people were employed in these companies. Almost all of these jobs were created in the last decade, which illustrates how important job creators these companies are. Value creation in startups and scaleup has increased by 92 percent in the last ten years. Startups established in the period 2016-2018 employed 3,500 people in 2021. All of these jobs were created in the last five years. Scaleups on the other hand employed 10,700 people, an increase of 2,600 since 2019. The employment growth in the companies defined as startups and scaleups in 2021 amounts to 12 percent of the net growth in the number of jobs in the Oslo region over the past decade.

The innovation ecosystem in the Oslo region has developed enormously over the past decade, with strong growth in the number of investors who invest in early-stage companies, in addition to support functions such as incubators, accelerators, co-working spaces and clusters. These actors who are part of the ecosystem within the startup environment in the Oslo region help to ensure the success of innovation-focused entrepreneurs.

The rapid development that has taken place is reflected both in international rankings as well as in an increase in the number of scaleups in particular, but also startups in a longer time perspective. Oslo has climbed 20 places since 2018 in the global ranking of innovation ecosystems' size, scale and growth.<sup>22</sup> This has resulted in an increase in Oslo's international visibility, which in turn helps to improve access to talent and capital.

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***Definition:** Value creation in a company is defined as the sum of wage costs and the company's operating profit, corrected for depreciation and write-downs. In other words, value creation can be understood as the sum of the company's returns, which goes to employees (salary), capital owners (profit), creditors (interest) and state and municipalities (tax). Alternatively, it can be understood as sales minus the operating costs associated with production. This is also known as gross domestic product or GDP. Value creation is one of the most important socio-economic variables, because this is what lays the foundation for welfare through consumption and taxes.*

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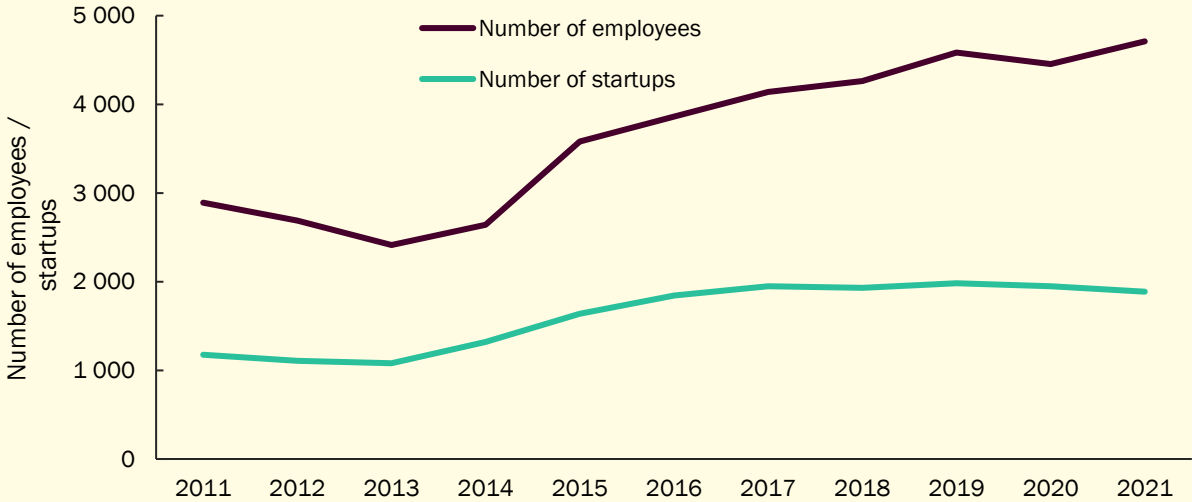
### 3.1 Startups

Over time, the number of startups in the Oslo region has increased, but in the last two years the number has fallen by five percent. Despite the fall in the last two years, the number of startups is two percent higher in 2021 than in 2016. The flat development in the last five years has occurred concurrently with increased activity in the innovation ecosystem. In the same period, employment in startups has increased by 22 percent. Growth in employment over the past five years is thus driven by growth in the number of employees per company. This indicates that the start-up companies are able to attract labour and build teams earlier than before, and that more of the startups are investing. The figure below shows the development in the number of startups and the number of employees in these companies.

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<sup>22</sup> Moonen, T., Nunley, T., Gille, B., & Ford, C. (2022). Oslo: State of the city. The Business of Cities Group

Figure 3: Development in the number of startups. 2011-2021.<sup>23</sup> Source: Menon Economics



The rise in employment from 2015 however coincides with an increase in the number of startups and a fall in oil prices which created challenges for the Norwegian economy. One effect of economic downturns such as the drop in oil prices, is that competent employees who previously had secure jobs increasingly choose to try and make it on their own. A job that previously felt secure can suddenly appear more insecure, and that is one of the reasons why one typically sees more new establishments of businesses during economic downturns.

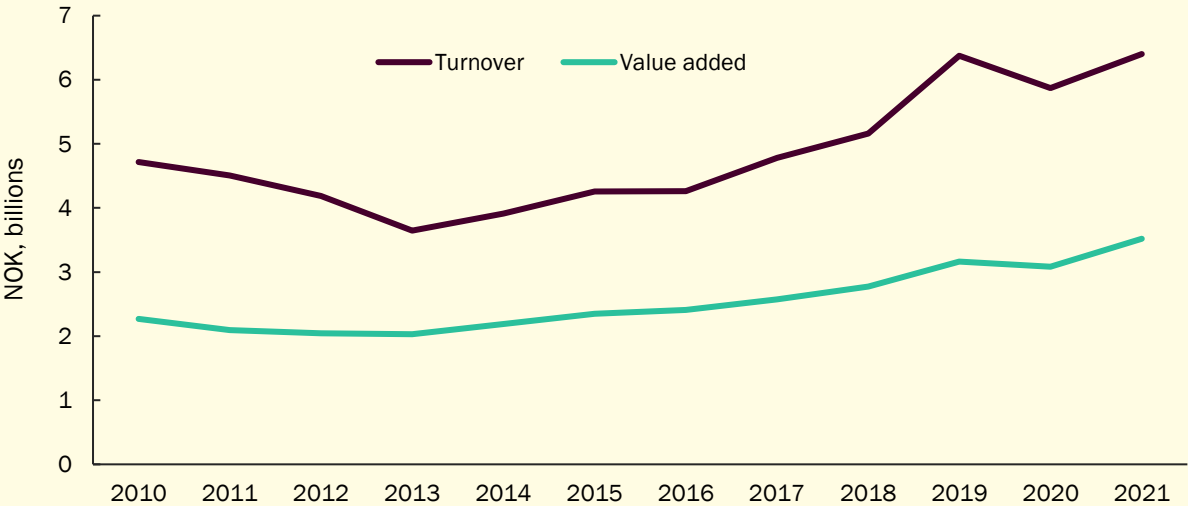
In 2012, the requirement for share capital to establish a limited liability company in Norway was reduced. This affects the rate of establishment of new businesses as of 2014. Coinciding with this was the downturn in the oil industry in 2014. The downturn led to tens of thousands of jobs in the industry disappearing and sent highly skilled labour into unemployment. It is also during this period that we can observe a paradigm shift in the culture of entrepreneurship in the region, with subsequent growth in the number of startups and the number of jobs in these companies.

In addition to the increase in the number of jobs in the startups, turnover (sales revenue) and value creation in the companies have increased as well. The development in turnover and value creation in startups is shown in the figure below.

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<sup>23</sup> In 2015, the method for reporting register-based employment changed. This led to a jump in employment figures from 2014 to 2015. One result of this is that the figures before and after 2015 are not directly comparable. However, register-based employment figures are adjusted after 2015, but this only partially compensates for the increase as a result of the change in the reporting regime.

Figure 4: Development in turnover and value added in startups in the Oslo region. 2010-2021. Source: Menon Economics



The growth in turnover and value added from 2016 to 2021 was 50 and 46 percent respectively and is comparable to the growth in the number of startups. However, employment growth has been somewhat higher than that.

Half a percent of value added in the City of Oslo (Oslo municipality) can be attributed to startups, and about one percent of employment. Employment in startups constitutes a larger share of total employment in the Oslo region compared to the share of value added. This is because many startups are running significant deficits, which in turn reduces value added. For example, startups in health care and life science employ 125 people. At the same time, their overall value added is negative, despite the fact that these companies have a total market value of billions of kroner. This illustrates the *potential* of the products they have developed, but these require large development costs before there are any commercial revenues.

**In focus 3: Health care and life science**

The Oslo region has a strong innovation ecosystem within health and life science. R&D-institutions such as UiO and OUS has researched innovations which has been taken further towards the market through development and commercialization. The innovation system within health care and life science is mature, with idea production, startup ecosystem and with connections to established businesses and capital.

The Oslo region is recognized internationally for its ability to grow companies within cancer medicine. Oncoinvent develops treatment for cancer patients and is an example of how successful entrepreneurs returns and becomes serial entrepreneurs. Oncoinvent is the third oncology company started by Roy Larsen to later be listed on public markets. Previously, he started Algeta and Nordic Nanovector. Another company within the same field is Nykode Therapeutics, a biotechnology company who develops immunological therapies and vaccines for cancer treatment. The company is listed on Oslo stock exchange and is currently valued at NOK 8.2 billion.

Within welfare technology the Oslo region also shows its strength. Examples of startups include Sensio and Telly, both developers of technology for application in health care services in the health sector.

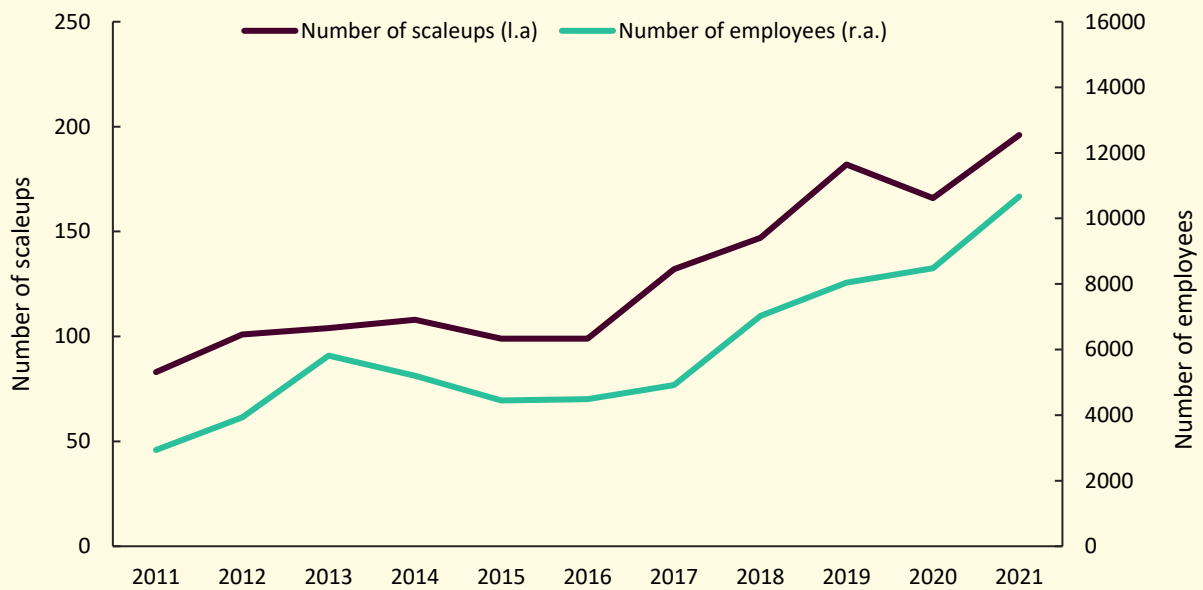
Companies within health care and life sciences in the Oslo region raised EUR 108 million in rounds in 2021.

### 3.2 Scaleups

Scaleups are young companies that are growing, with a commercialized product or service. Scaling up often involves international expansion, at the same time as the company needs to raise capital and focus on recruitment. Scaling triggers the need for investments in both capital goods and human capital. Norwegian scaleups often mention the availability of a highly educated labour force with competitive salary levels as an advantage of scaling up from Norway.<sup>24</sup> On the other hand, difficulties in obtaining qualified labour are pointed out as a challenge.

Over time, the number of innovative scaleups has increased, with a growth of 98 per cent from 2016 to 2021, despite a temporary drop in 2020. Figure 16 shows the development in the number of scaleups in the Oslo region, and the number of employees in these companies since 2011.

**Figure 5: Number of scaleups in the Oslo region and number of employees in these companies. 2011-2021. Source: Menon Economics**

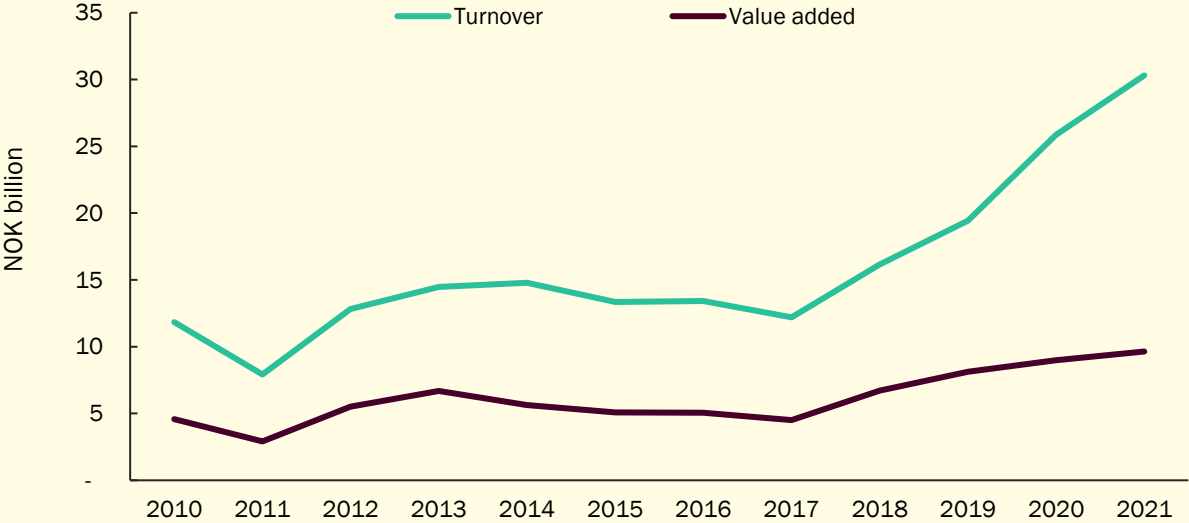


As the number of companies has increased, the number of employees in scaleups in the Oslo region has also grown significantly since 2016, and more than doubled with a growth of 138 percent. In 2021, innovative scaleups employed 10,700 people. On average, each scaleups employs more people than five years ago. The increase in the number of scaleups reflects the development in the startup environment, which in turn lays the foundation for more innovative scaleups.

Figure 17 shows turnover and value added in scaleups in the Oslo region over time. In 2021, the companies had a turnover of NOK 30 billion, more than double that of 2016. Value added by the companies was NOK 9.6 billion, a growth of 90 percent since 2016.

<sup>24</sup> Menon (2018): Vekstvilkår for norske scale-ups

**Figure 6: Turnover and value added in scaleups in the Oslo region over time. 2011-2021. Source: Menon Economics**

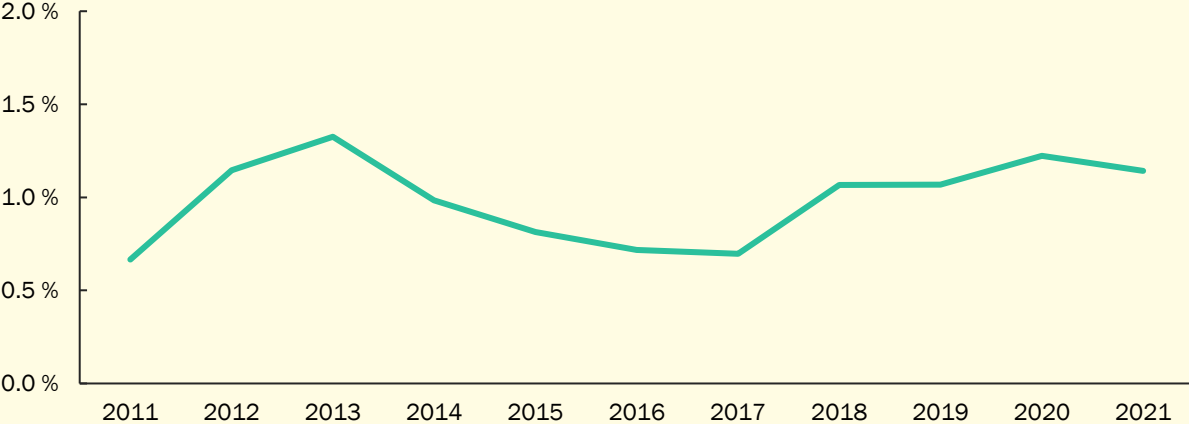


From 2011 to 2013, there was growth in both the companies' turnover and value added, before a fall between 2013 and 2017. From 2017 onwards, the development has accelerated, with significant growth in value added and turnover in scaleups.

Turnover and value added in the population of scaleups varies over time, as some of the companies keep growing while others fail to maintain their growth rate and fall out of our definition. Nevertheless, the underlying trend is that both turnover and value added are growing over time, in line with the number of scaleups.

The figure below shows the value added in the scaleups in the Oslo region as a share of Oslo's overall value added. The scaleups' value added accounts for an average of 1 percent of Oslo's total value creation, but if we compare with the figure above, we see that this share rises in periods where the scaleups' value creation increases. This means that the scaleups' growth does not follow the city's growth but grows independently of this. Since 2017, more and more of Oslo's value added has come from scaleups, with a peak in 2020. In 2021, around 1.1 percent of Oslo's value added came from growth companies.

**Figure 7: Scaleups' share of total value added in the City of Oslo. Source: Menon Economics**



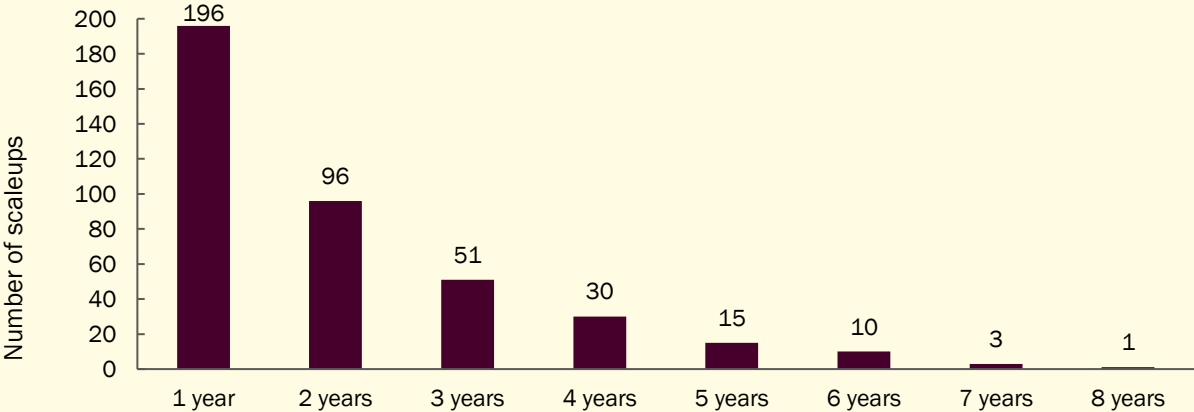


### 3.2.1 Continuous high growth is a rare commodity

Many companies manage to achieve growth over a shorter period, but few manage to maintain high growth for a long time. However, there are a few growth winners who manage this over longer periods.

We have looked at how many of the scaleups in 2021 have shown consistent high growth in recent years. The figure below shows for how many years they have been classified as a scaleup. The selection consists of the companies that were defined as scaleups in 2021.

Figure 8: Number of consecutive years as a scaleup, among scaleups in 2021. Source: Menon Economics



The figure show that half of scalups in 2021 were not defined as a scaleup in 2020.<sup>25</sup> Out of the 196 innovative scaleups in 2021, only 96 were defined as scaleups in the previous year. This means that at that point they had not had three consecutive years of high growth yet. This illustrates how much turnover there is from year to year among companies that manage to have sufficient growth to be defined as scaleups.

Among the companies that are scaleups in 2021, there are three companies that have been defined as such continuously since 2015: Knowit Dataess, Gelato and Milrab. The print-on-demand company Gelato achieved unicorn status in 2021, when it raised more than NOK 2 billion in funding and was valued at over one billion dollars. Without owning a single print shop, Gelato has become the world's largest network for the production of personalized products such as cups, clothes, posters, wall art or cards.

The scaleups from 2021 have already created large values. Collectively, these 196 companies have created 10,500 jobs and a value added of NOK 9.4 billion during the past decade. Considering how difficult it is to maintain high growth over time, it is likely that many of the scaleups from 2021 will stagnate or be acquired. Due to this, significant turnover is expected in next year's population of scaleups.

<sup>25</sup> They may however have been so in 2019 for example, or any previous year

## 4 Access to capital for scaleups and startups in the early phase

Over time, access to capital in the early stage has improved. Startups and scaleup in Norway, and particularly in the Oslo region, are increasingly attracting external capital. In recent years, there has been a flourishing of many new investment funds. In addition, there has been an increase in seed and venture capital supplied to startups and scaleups from private equity.

Based on statistics for investments in startups and scaleups, here we have a closer look at the access to capital in the early business phase, also known as seed and venture capital. We look at access to capital based on a number of sources, also relative to other European countries.

Startups and scaleups in the early phase are often dependent on risk capital. This capital finances investments in development and labour to develop products and scale up good entrepreneurial companies. Much of the innovation in the business sector takes place in young, emerging companies, and the ability to innovate can be affected by access to financing in the early phase. The need for financing will vary across industries, but most innovative scaleups and startups will be dependent on external financing to finance the development of the business.

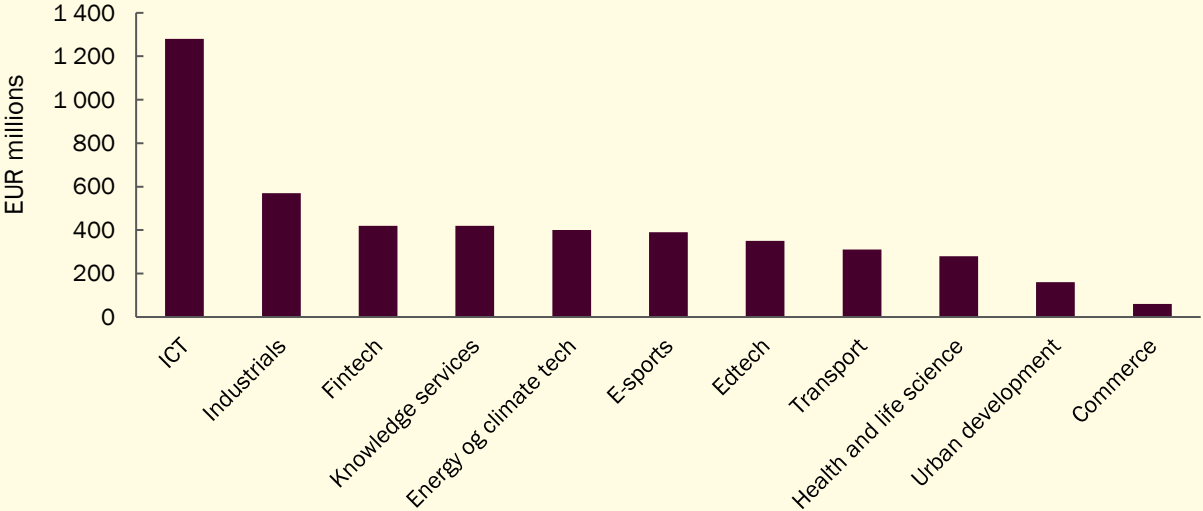
### 4.1 The ICT industry attracts most capital

The need for capital varies across industries. Factors that affect the need for capital are how much R&D is needed until a product is ready for the market, how fully developed the product must be before it can be launched, in addition to how much of different input factors are required in production.

Access to capital also varies. The presence of specialized investors can be important in some cases, or the existence of previous successful companies that have made Norwegian or international investors open their eyes to innovations in the field.

With the help of Dealroom's database of investments in startups and scaleups, we are able to see which industries attract the most capital. In total, the companies have raised EUR 3.6 billion in the period 2016-2022. In the figure below, we show how total investments are distributed across industries.

**Figure 20: Investments in the Oslo region distributed according to industries from 2016 to 2022. Includes investments into both startups and scaleups. EUR million. Source: Dealroom.co<sup>26</sup>**



Companies in the ICT industry have attracted more than twice as much capital as the next largest sector with EUR 1.3 billion. ICT is also the industry where the most companies have raised capital. Large fundraising rounds in ICT include, among others, Cognite. Companies within industrials are often capital-intensive, and this is the sector that has raised the second highest amount of capital with EUR 570 million. In fintech, companies such as Dune Analytics, Aprila Bank and Zwipe have had large funding rounds.

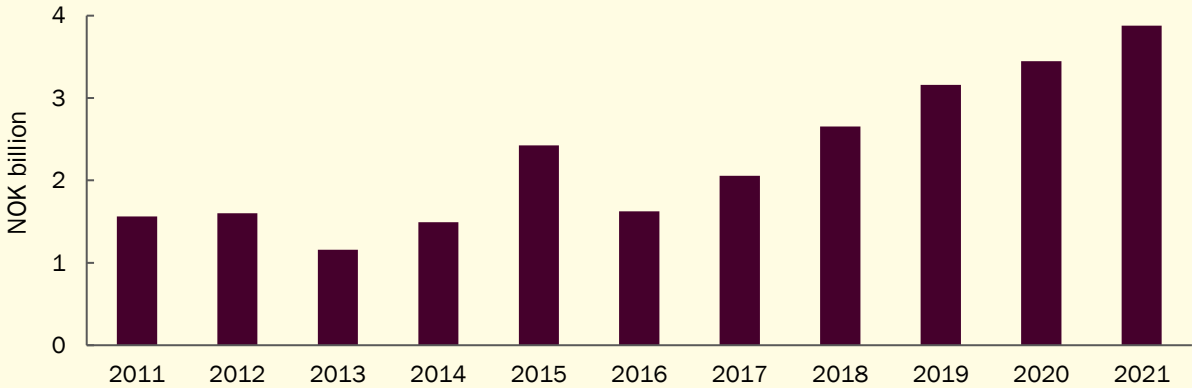
Within energy and climate tech, EUR 400 million have been raised. Here, companies such as Otovo, Zeg Power and Wind Catching Systems have had financing rounds where they raised a lot of capital. The scaleups Kahoot! and Attensi are behind large funding rounds in edtech. PortalOne and Playfinitiv within E-sports and gaming have obtained seed funding in the early phase. Within urban development and mobility, scaleups such as Spacemaker and Xeneta and startups such as Defigo and Unloc have raised significant amounts of capital.

**4.2 Access to capital has improved over time**

With the help of Menon's database of accounting information for Norwegian companies, we have looked at paid-in capital in startups and scaleups in the Oslo region. The figure below shows how paid-in capital in companies has developed over time among startups.

<sup>26</sup> Some companies are tagged in two industries and will be double-counted.

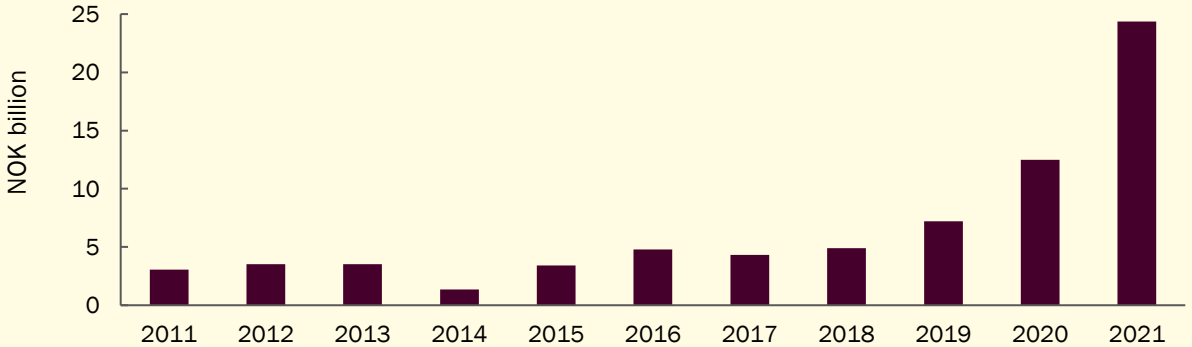
**Figure 21: Startups – Development in paid-in capital over time. 2011-2021. Source: Menon Economics**



Paid-in capital in startups has increased significantly over the past five years, despite overall growth in the number of startups, as shown in Chapter 1. However, the growth in paid-in capital has been higher than the growth in the number of startups, so the amount of capital per startup has increased. Growth has been stable since 2016.

Similarly, we have looked at paid-in capital in the identified scaleups, which had as much as NOK 24.4 billion in paid-in capital in 2021. The development over time is shown in the figure below.

**Figure 22: Scaleups – Development in paid-in capital over time. 2011-2021. Source: Menon Economics**



Over the past four years, paid-in capital in scaleups has exploded, with marked growth since 2017. This has happened in tandem with several scaleups going public to raise capital. In addition, there has been an underlying growth in the number of scaleups. A few companies with particularly high valuations both privately and publicly held has resulted in this increase.

The development in paid-in capital in startups and scaleups in the Oslo region is reflected in statistics from other sources. National statistics from private equity show that the amount invested in the seed and venture phase has increased, particularly in recent years.<sup>27</sup>

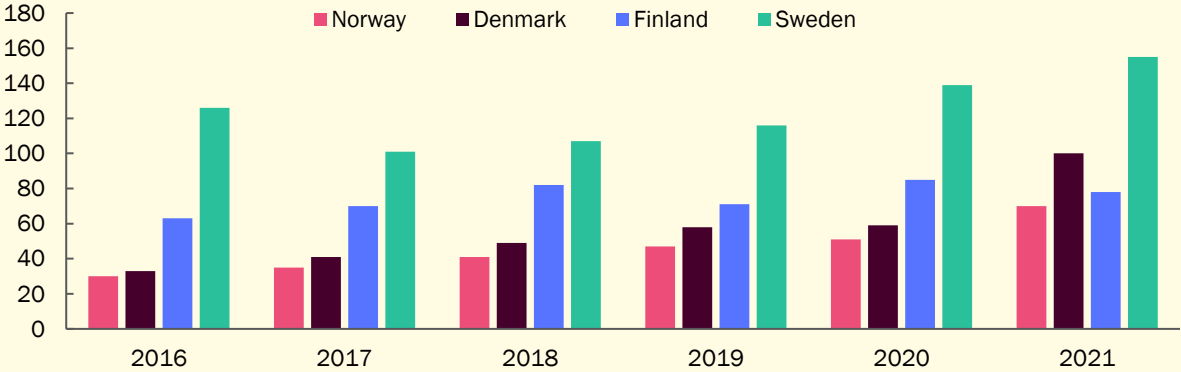
In the evaluation of Innovation Norway's start-up financing<sup>28</sup>, 60 new investment instruments were identified, in the form of funds and investment vehicles aimed at companies in the start-up and growth phase. Public policy instruments such as Investinor's fund-in-fund investments and the pre-seed scheme have helped to channel capital to a number of investment communities. In total, early stage capital of NOK 16 billion was

<sup>27</sup> Menon (2022b): *Private Equity Funds in Norway*  
<sup>28</sup> <https://www.menon.no/wp-content/uploads/2022/81-Evaluering-av-INS-Oppstartfinansiering.pdf>

identified in the period 2015 to 2021.<sup>29</sup> The evaluation also shows that an increasing proportion of the capital supplied to Norwegian companies in the early stage is channeled to companies in Oslo.

Although access to capital in the early phase in the Oslo region has improved over time, comparisons suggest that Norway lags behind neighbouring countries. The figure below shows statistics obtained by Argentum showing the number of venture investments in the Nordic countries in recent years.

**Figure 23: Number of venture investments in Nordic countries. 2016-2021. Source: Argentum**



Norway and Denmark have traditionally had fewer early-phase investments than Finland and Sweden. During the period 2016 to 2021. However, Norwegian and Danish early-stage investments have increased more than in Finland and Sweden, and Norway has thus closed part of the gap in the number of investments. In 2016, more than four times as many investments were made in Sweden as in Norway, while the ratio was reduced to 2.2 in 2021.

In recent years, both Norwegian and foreign fund managers have raised a lot of capital for new investments in early-stage companies. In 2021, available capital for new investments in the early phase was estimated at NOK 18 billion among members of the Norwegian Venture Capital Association and other Norwegian managers. This was an increase of 50 percent from 2020. This, in combination with the fact that a number of other new investment instruments have been created in recent years, suggests that access to capital will be good in the coming years.

There is, however, some uncertainty associated with several factors in the current economic situation that may affect access to capital. Geopolitical uncertainty, as well as rising inflation and interest rates can affect the valuations of companies and make investors less willing to invest. In addition, many companies experience a lack of input factors, both due to delays in international supply chains, high energy prices and a tight labour market. Conditions like this can make investors want to sit on the fence and postpone investments.

<sup>29</sup> Part of this is invested abroad and a significant share is used to follow up existing portfolio companies.

# Appendix

## Startups and scaleups according to criteria

Table 1: Number of identified innovative startups with growth potential in 2021. Source: Menon Economics

Criterion	No. of companies	Share of startups
Knowledge-intensive industries	1 877	99%
J-curve	65	3%
SkatteFUNN (R&D tax credits)	164	9%
Paid-in capital	122	6,5%
<b>Total</b>	<b>1 886</b>	<b>100%</b>

Table 2: Number of identified scaleups with growth potential in 2021. Source: Menon Economics

Criterion	No. of companies	Share of scaleups
Knowledge-intensive industries	180	92%
SkatteFUNN (R&D tax credits)	115	59%
Paid-in capital	90	46%
<b>Total</b>	<b>196</b>	<b>100%</b>

## Industry classification

Table 3: Description of industries

Industry	Description
ICT	Producers of hardware and software. Service providers with a heavy element of technology, such as SaaS and ICT consulting. Also includes telecommunication and producers of semiconductors.
Knowledge services	A broad range of specialized services aimed at both the business and industry sector and consumers.
Health care and life science	Biotechnology, drugs, diagnostics, medtech, food technology and welfare technology
Energy and climate technology	Companies that produce renewable energy and companies that deliver technology that helps to reduce climate emissions.
Fintech	Financial actors that produce innovative solution with the help of technology, as well as providers of financial services.
Industrials	Industrial production within both a wide range of markets, including process industry, materials, sensors, building materials with more.
Edtech	Technology that facilitates learning
Urban development	Includes proptech, which is technology that is aimed at the development and management of real estate. Also includes transport and mobility, which again includes micro-mobility and sharing solutions.
Ocean space industries	Covers companies aimed at the seafood industry, the petroleum industry or the maritime industry
E-sport	Technology for e-sport and gaming. Includes technological solutions for application in sports.
Commerce	Covers a broad range of solutions for trade, both physically and in the shape of e-commerce, oriented at consumers.

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## Data sources and method

Our definitions are mainly based on characteristics that are identifiable by using accounting variables and company information from the Brønnøysund register, in addition to other public sources. In this way, the definitions are operational, and enable us to count the companies that fall under the various definitions. Menon's proprietary database consists of accounting data for all Norwegian companies from the Brønnøysund registers from 1992 to 2021. Accounting data is obtained from Dun&Bradstreet. Unconsolidated accounting data has been used, which means that each company is treated as an independent entity, even if it is a subsidiary of a group.

## Knowledge-intensive industries

Table 4: Knowledge-intensive industries, defined by the criterion that the share of employees with higher education than a bachelor's degree is more than 33 percent. Source: Statistics Norway<sup>30</sup>

NACE Rev. 2 Division	Name
6	Mining and quarrying
9	Mining and quarrying
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
26	Manufacture of computer, electronic and optical products
35	Electricity, gas, steam and air conditioning supply
51	Transportation and storage

<sup>30</sup> Berg, L. P. (2016). Kunnskapsintensive næringer i Norge.

58	Publishing, audiovisual and broadcasting activities
59	Publishing, audiovisual and broadcasting activities
60	Publishing, audiovisual and broadcasting activities
61	Telecommunications
62	Computer programming, consultancy and related activities; information service activities
63	Computer programming, consultancy and related activities; information service activities
64	Financial and insurance activities
65	Financial and insurance activities
66	Financial and insurance activities
68	Real estate activities
69	Legal and accounting activities; activities of head offices; management consultancy activities; architecture and engineering activities; technical testing and analysis
70	Legal and accounting activities; activities of head offices; management consultancy activities; architecture and engineering activities; technical testing and analysis
71	Legal and accounting activities; activities of head offices; management consultancy activities; architecture and engineering activities; technical testing and analysis
72	Scientific research and development
73	Advertising and market research; other professional, scientific and technical activities; veterinary activities
74	Advertising and market research; other professional, scientific and technical activities; veterinary activities
75	Advertising and market research; other professional, scientific and technical activities; veterinary activities
78	Administrative and support service activities
82	Administrative and support service activities
84	Public administration and defence; compulsory social security
85	Education
86	Human health activities
87	Social work activities
88	Social work activities
90	Arts, entertainment and recreation
91	Arts, entertainment and recreation
93	Arts, entertainment and recreation
94	Other service activities
99	Activities of extra-territorial organizations and bodies

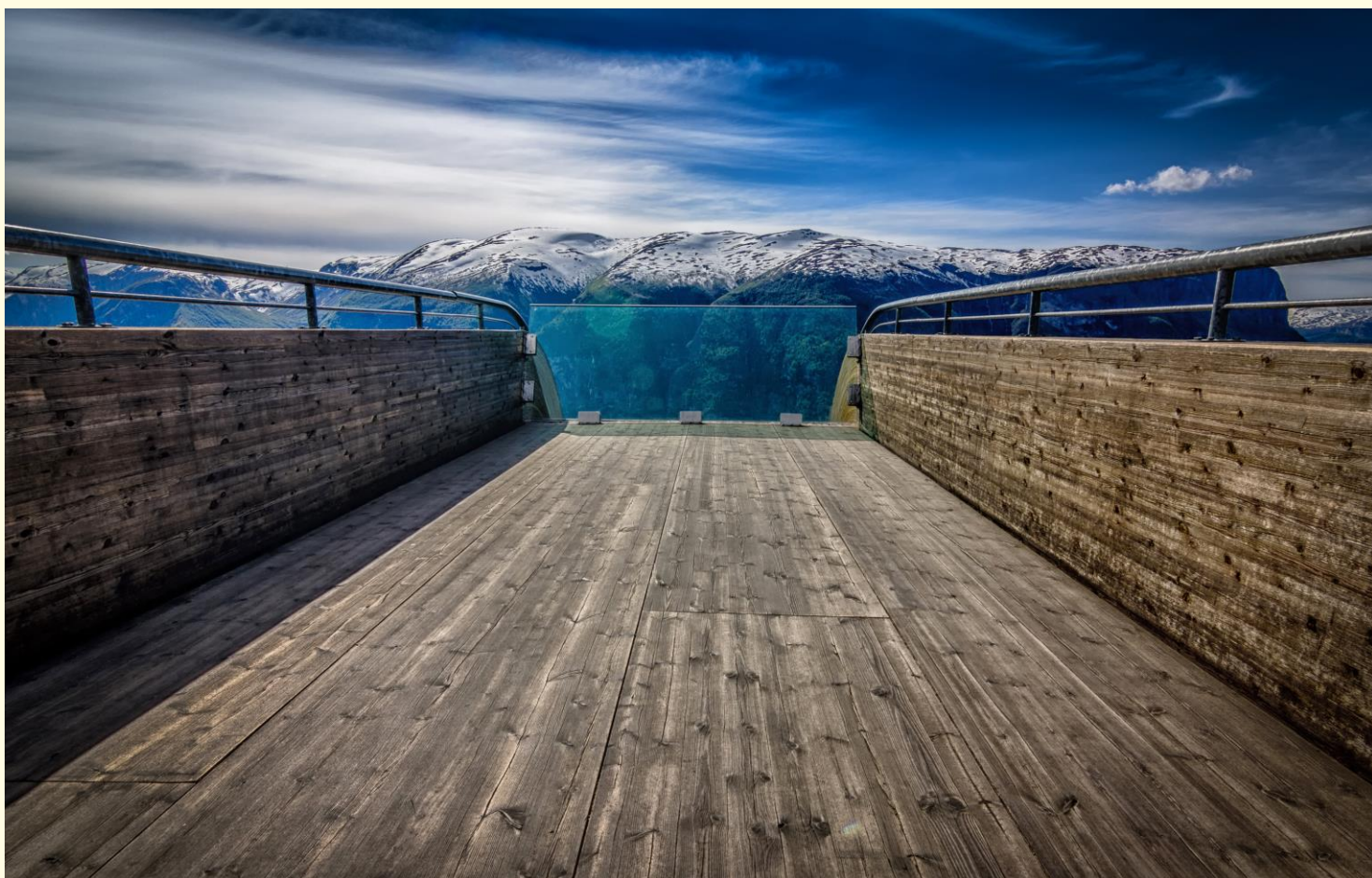
## Definition of the Oslo region

Table 5: Municipalities that are part of the Oslo region (Oslo housing and job market region)

Municipalities in the Oslo housing and job market region
Oslo
Bærum
Asker
Lillestrøm
Nordre Follo
Lørenskog
Nittedal
Nesodden
Rælingen
Ås
Lier



Frogn
Nes
Vestby
Enebakk
Aurskog-Høland
Lunner
Gjerdrum
Hole
Gran



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