

Report

Startups and Scaleups in the Oslo Region - 2023



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Preface

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

We thank Oslo Business Region for an exciting project. We would also like to thank the reference group consisting of Anniken Hofgaard (Ferd Impact Investing), Hildur Smaradottir (Defigo) and Karl Liapunov (Startuplab) 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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Key definitions

Startup. Startups are from 2-5 years of age counting from the first year of economic activity, 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 of its existence
- c. J-curve: the company has had an operational loss that amounts to twice the accumulated revenues in the first 2-5 years, and has registered wage costs
- d. Capital intensive: the company has increased its share capital by at least NOK 100,000

Scaleup. 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: 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 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.

Value creation. 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.

ICT industry. Producers of software and hardware. Service providers with a heavy element of technology, such as SaaS and ICT consulting. Also includes telecommunication and producers of semiconductors. Companies placed in this industry have no clear connection to value chains in specific industries.

Knowledge industries. A broad range of specialized services aimed at both the business and industry sector and at consumers. Examples are consultants, architects or companies that offer professional services.

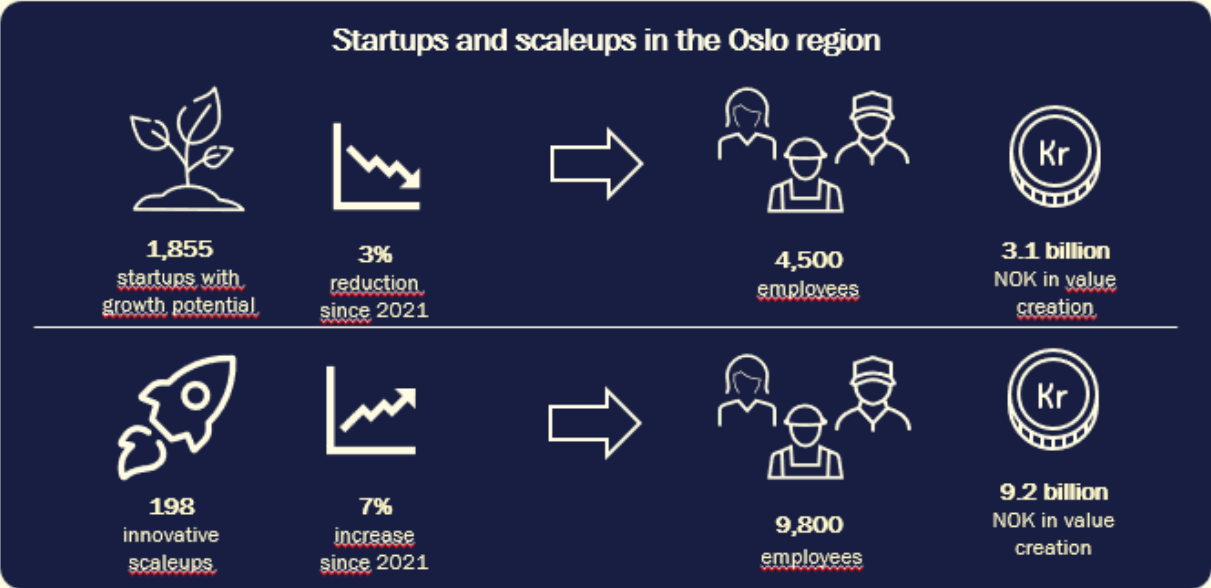
Summary

This report provides a status for and insight into the development in the number of startups and scaleups in the Oslo region. In addition, we show the contribution of these companies to value creation and employment.

We find 1,855 startups in the Oslo region in 2022, a reduction of 3 percent from 2021. These startups have a combined value creation of NOK 3.1 billion and employ 4,500 people. Of these, 260 are identified as capital and R&D intensive and considered to have particularly high growth potential. Over the last five years, the number of startups has been stable. Due to the high growth in new business formations during the pandemic, an increase in the number of startups was expected in 2022, but this growth did not materialize. However, for the same reason, we anticipate a slight increase in the number of startup companies next year.

Furthermore, we find 198 scaleups, an increase of 7 percent since 2021. Scaleups in the Oslo region employ 9,800 people in total and have a value creation of NOK 9.2 billion, which accounts for 1 percent of value creation in Oslo. A clear majority of startups, and scaleups in particular, are located in Oslo. The figure below summarizes some of the main findings in the report.

Figure 1: Summary of main findings for startups and scaleups in the Oslo region in 2022

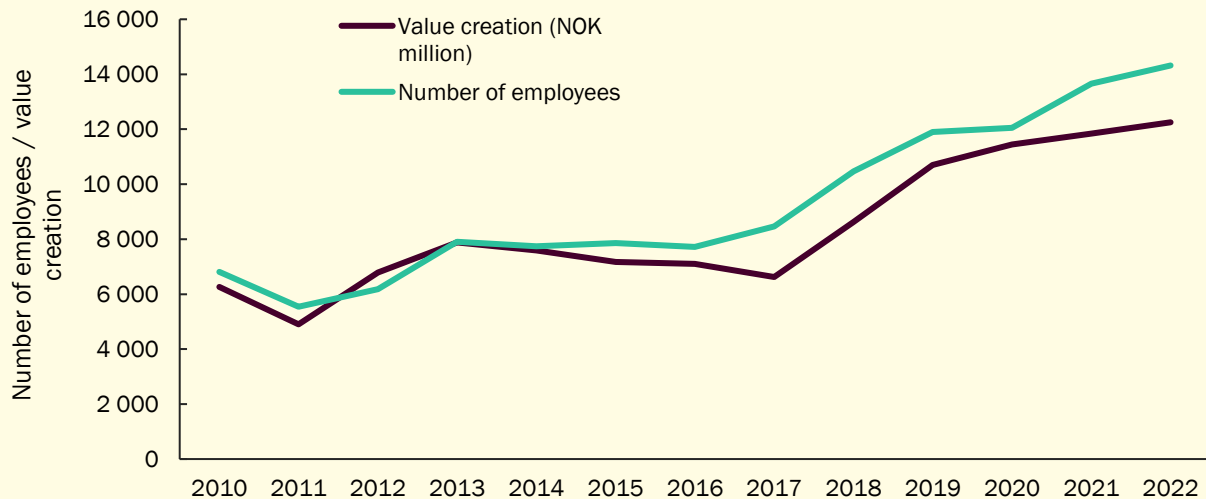


In total, we find 2051 startups and scaleups in the Oslo region in 2022. These companies employed 14,300 people in 2022, more than twice as many as in 2011. The companies thus stood for 12 percent of net job growth in the Oslo region since 2011.

Startups and scaleups in the Oslo region had a total value creation of NOK 12.3 billion in 2022.

The figure below shows the development in total employment and value creation from startups and scaleups in the Oslo region.

Figure 2: Total value creation and employment in startups and scaleups in the Oslo region. Source: Menon Economics



The ecosystem for entrepreneurship, with startups and scaleups, is entirely dependent on access to capital to finance technological development and commercialization. Financing from investors is a prerequisite for successful innovation work in most cases, and the need for capital is usually significant in the development and commercialization phase.

Companies in Oslo have attracted as much as EUR 4.4 billion in venture investments over the last three years

Early-stage companies in the Oslo region are attracting more and more capital. Compared to its Nordic neighbors, access to capital in the early phase has improved, as there is an increasing number of scaleups and new investment funds in Oslo.

•

In this report, we identify innovative startups with ambitions for growth, and scaleups that are considered knowledge-intensive and have further growth potential. The report illustrates the contribution of startups and scaleups to the region in the form of jobs created, value added and other societal benefits. The report is published annually and will follow the development of the Oslo region from year to year.

The report is structured as follows: Chapter 1 presents the identified population of startups in the Oslo region, and their contribution to employment and value creation over time. Chapter 2 presents the population of scaleups in the Oslo region, and their contribution to employment and value creation over time. Chapter 3

looks at the development of access to capital for companies in the start-up and scale-up phase. More detailed information about data sources and methods is available in the appendix to the report.

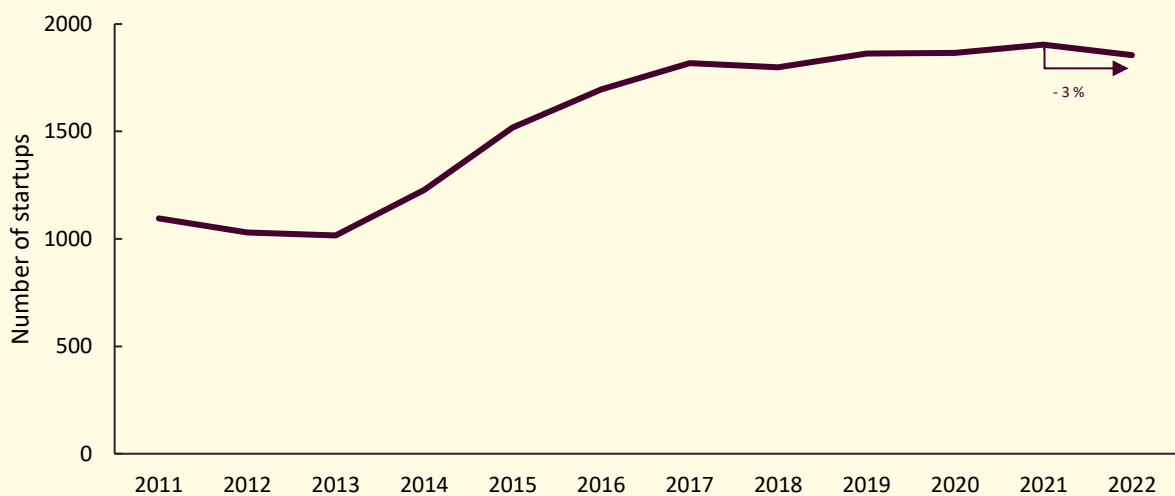
1 Startups in the Oslo region

In 2022, the Oslo region is home to 1,855 startups, which contributed NOK 3.1 billion in value creation and employed 4,500 people. Most of these are located in Oslo, Bærum, Asker and Lillestrøm. The majority of startups are ICT or knowledge-based enterprises, but a large number are also specialized within health and life science, energy and climate, or financial technology.

1.1 The number of startups in the Oslo region has fallen since 2021

The number of startups in the Oslo region has fallen by 3 percent since 2021.¹ The historical development in the number of startups according to the definition is illustrated in Figure 3.

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



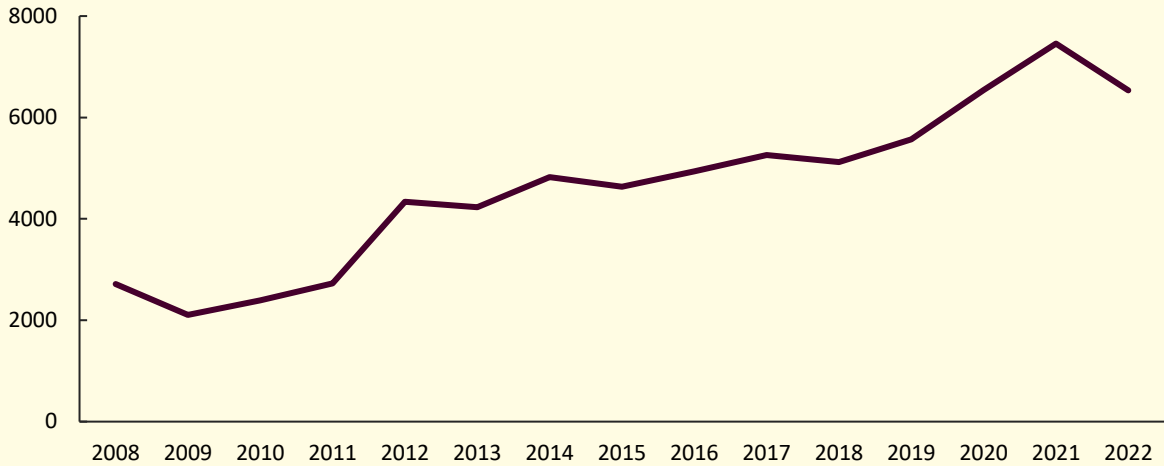
The number of startups in the Oslo region increased significantly from 2013 to 2017 but has in the following years been relatively stable at just below 1,900. In 2022, there are 1,855 startups in the region.

Newly established companies² are the basis for the innovative startups. Some of these companies will later turn into what we consider startups for the purposes of this report. Figure 4 shows the number of newly established companies in Oslo from year to year.

¹ Menon (2022): *Startups and Scaleups in the Oslo Region*

² Newly established companies: All companies that are registered in the Brønnøysund register of company accounts in the same year. A newly established company is not necessarily a startup. It can for example be a spin-off or a carve-out from a larger company.

Figure 4: Number of newly established companies in Oslo from 2010-2022. Source: Statistics Norway



Here we see that the number of newly established companies grew significantly in 2020 and 2021 before falling by 12 percent in 2022. In 2022, 6,500 companies were established in Oslo, or 9.2 per 1,000 inhabitants. In comparison, 22,200 companies were established in Stockholm, which corresponds to 9.5 per 1,000 inhabitants. Like Oslo, Stockholm also experienced an increase in the number of new establishments during the pandemic years of 2020 and 2021, followed by a decline in 2022. However, the decrease in Stockholm was somewhat smaller at 7 percent.

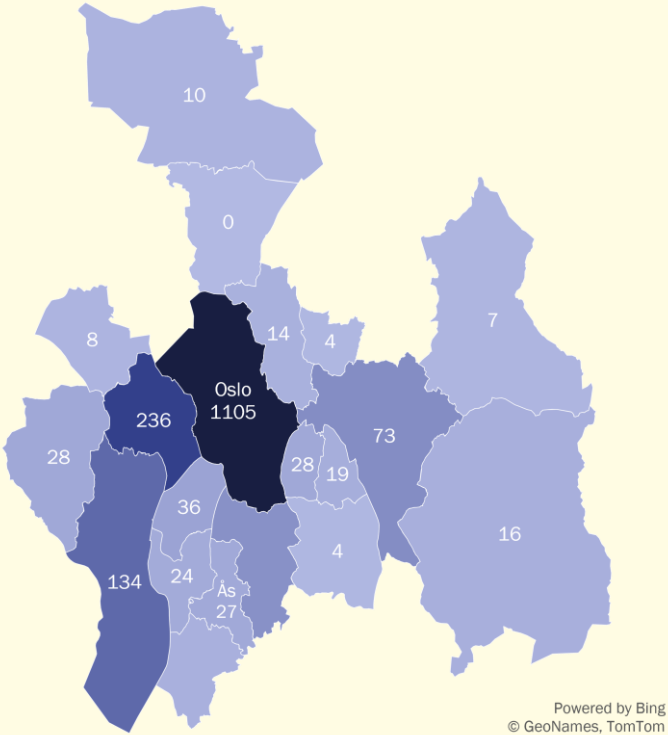
The growth in the period up to 2021 is likely due to temporarily higher unemployment and many temporary lay-offs. The pattern of an increased number of new establishments in bad economic times and correspondingly fewer new establishments in downturns is repeating itself. A high rate of new establishments in the years of the pandemic will likely lead to an increase in the number of startups from next year, since these companies will then be 2 years of age or older and fall under the definition used in this report. There are a number of other factors that also affect the development in the number of startups, but an increased rate of establishment indicates that there will be more startups with growth ambitions in the coming years.

The decline from 2021 to 2022 may be due to multiple factors. For individuals, rising interest rates have resulted in higher borrowing costs, while high inflation has increased the prices of other goods and services. In addition, unemployment has remained low. In sum, this may mean that the safety provided by a stable and secure salary is perceived as more attractive than the risk of starting something new. Or in other words, the economic situation in Norway today may inhibit innovation and entrepreneurial spirit.

It is important to note that the number of newly established companies in the region is still higher in 2022 than in the years before 2020, and that the decline thus may represent a normalization from the years before.

The Oslo region consists of 20 municipalities with Oslo as the centre of gravity in the middle, and 60 percent of the startups are located in Oslo municipality. The map in figure 5 shows the distribution of startups in the Oslo region.

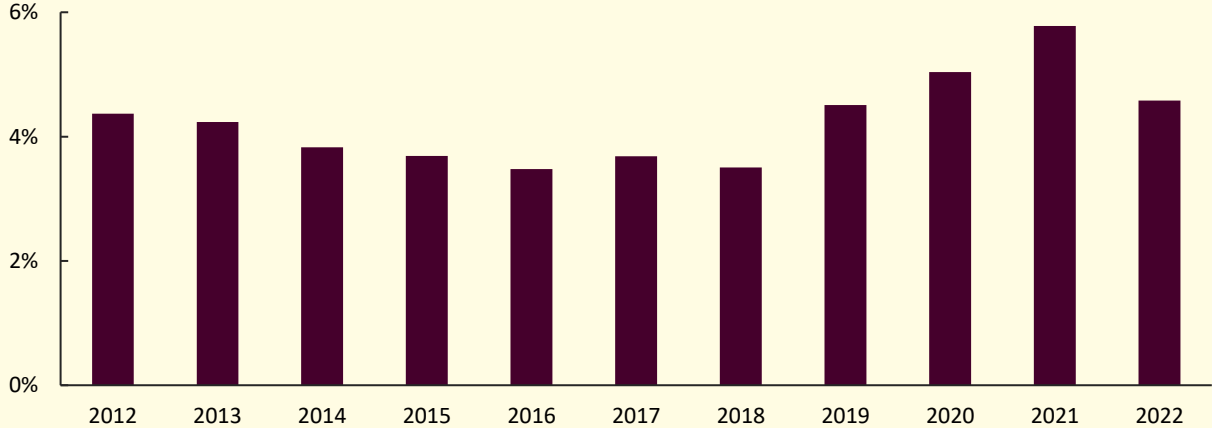
Figure 5: Startups in the Oslo region in 2022, distributed by municipality. Source: Menon Economics



In addition, we see that Bærum, Asker and Lillestrøm are successful in fostering startups too. These are some of the country’s most populous municipalities, with an innovative business and industry sector and strong knowledge environments. In 2022, there were 236 startups in Bærum, 134 in Asker, and 73 in Lillestrøm. In total, 24 percent of all startups in the Oslo region were located in these three municipalities. The remaining 16 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 6-7 percent of the startups in the Oslo region were 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. 2012-2022. Source: Menon Economics

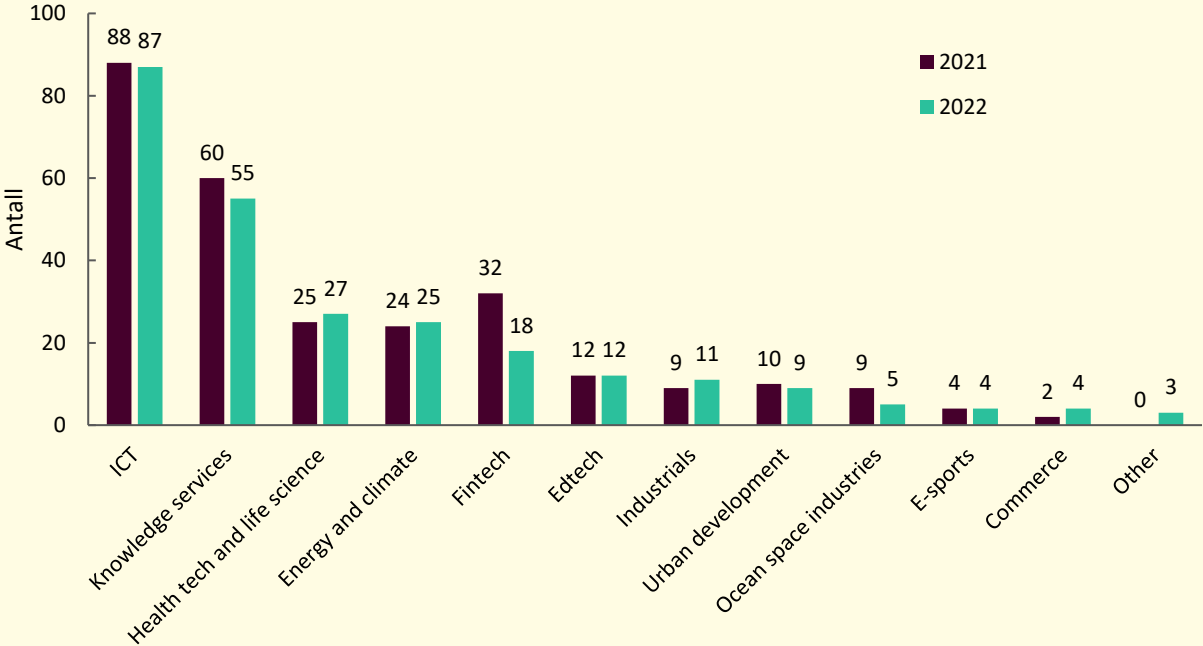


The share of startups that have moved to the region has on average been around 4 percent since 2012, but that share has been somewhat higher in the last four years. At its peak in 2021, 6 percent of all startups in the Oslo region had moved to the region from elsewhere. In 2022, the share was approximately the same as in 2019, with around 4.5 percent of startups having relocated to Oslo. The number of startups moving to the region fell by 22 percent from 2021, which is a larger decline than in the total population of startups. The decline in startups relocating from elsewhere thus contributes to the fall in the number of startups in the Oslo region.

1.1.1 Startups represent a broad range of industries

The Oslo region is home to a number of research communities and startup environments with expertise in different fields. As a result, startups are emerging in a range of industries that Norway and Oslo have traditionally been involved in, as well as other areas that are newer in the context of Norwegian business. For the startups that are either capital or R&D intensive, we have mapped what industries they belong to in 2021 and 2022. 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 in 2021 and 2022.

Figure 7: Startups according to industry affiliation. Excluding companies that only qualify by way of belonging to a knowledge-intensive industry. Source: Menon Economics



The figure shows that most startups can be found in the ICT industry.³ Furthermore, there are 55 startups within knowledge services, which includes the provision of professional services, requiring specialist expertise and often also considerable technological knowledge. Here we find companies such as Skråstrekk, a consultancy firm offering expertise within design, and Sky of Norway, which supplies IT tools for interior designers.

³ A definition of the ICT industry and examples of companies in the industry can be viewed in table 0-3 in the appendix.

The decline in the number of startups is most pronounced among companies that offer financial technology. Here, a number of companies have fallen out of the population due to their age, but also due to lack of activity⁴. The number of companies within knowledge services, the ocean space industries and ICT is also declining.

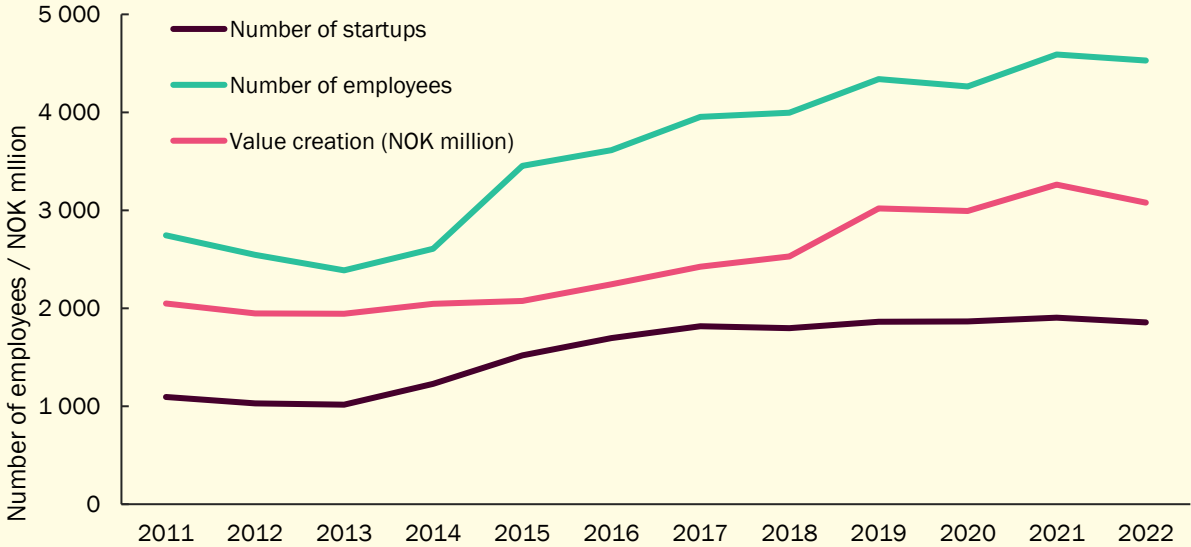
A field that is receiving increasing attention is the area of energy and climate technology, both due to the scarcity of energy and the need for a transition to renewable energy sources. Within energy and climate tech we find companies such as the hydrogen firm Hystar, which had the biggest financing round so far in 2023 with USD 26 million, where international investors are represented. Another company within energy and climate technology is Glint Solar, which simplifies the process of identifying promising areas for solar energy production.

Health and life science has in 2022 become the third largest industry for startups in the Oslo region. In this industry, we find for example the biopharmaceutical company Zelluna Immunotherapy, which researches cellular therapy for cancer patients.

1.2 Startups' contribution to growth

In the long term, the number of startups in the Oslo region has risen, but during the last five years the number has been more or less stable, and the number of startups in 2022 was approximately the same as in 2017. The figure below shows the development in the number of startups, and the value creation⁵ and number of employees in these companies.

Figure 8: Development in value creation and employment in startups in the Oslo region.⁶ Source: Menon Economics



⁴ This means there are no wage costs or revenues registered.

⁵ 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.

⁶ 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.

The flat development in the last five years has happened at the same time as activity in the innovation ecosystem has increased, and since 2017, employment in startups has risen by 13 percent. This means that the growth in employment in the last five years is driven by growth in the number of employees per company. This indicates that the startups manage to attract a labour force and build teams earlier, and that more of the startup companies are trying to realize their ambitions.

Value creation has also increased despite the fact that the number of companies is stagnating. The fall in the number of startups has influenced value creation proportionally (3 percent), while employment only fell by 1 percent. This means that startups with a relatively high number of employees have fallen out of the population to a lesser degree.

Half a percent of value creation 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 creation. This is because many startups are running significant deficits, which in turn reduces value creation.

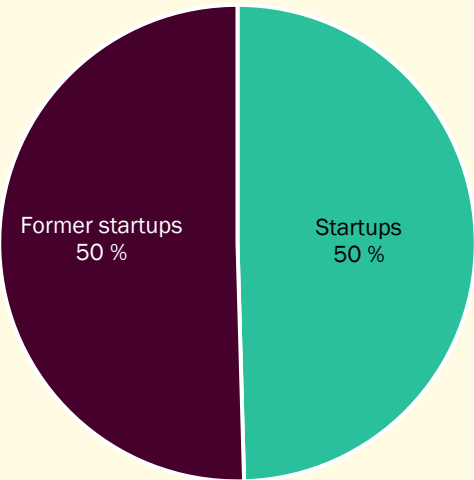
Startups typically have low value creation, as a natural consequence of the phase they are in. It is the expectations of future value creation and employment that makes investors want to finance these companies, and that society wants to promote innovation and entrepreneurship. In 2022, startups in the Oslo region had a value creation of almost NOK 3.1 billion. When we look at value creation in 2022 from both startups and companies that were identified as startups earlier (during the last ten years), we find that value creation has more than doubled.

In 2022, present and former startups created over NOK 6.2 billion in value added

More than half of this value creation took place in those companies that formerly were startups, as shown in figure 9.

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 9: Value creation in 2022 distributed on present and former startups (in the period from 2012-2021). Source: Menon Economics



The value creation comes from 3,204 companies in total, whereof 58 percent are startups today. In other words, there are many startups that do not survive, but those that succeed have a significantly higher value creation per company today than the companies that are startups at present.

From 2021 to 2022, the dropout rate from the startup population is high. 416 that were identified as startups last year fell out of the population in 2022. For a large part of these companies, this is due to the fact that the company has aged out of the startup definition, because more than six years have passed since it started its activities. With other words, these companies continue their operations, but are no longer new enough to be considered startups according to our definition. Six of these companies are now identified as scaleups: Oslo Works, Fink, Cloud Connection 2, Aera Payment & Identification, Sicra and Morgenstern.

55 of the companies that dropped out of the population did so because of inactivity. Inactivity can be a sign of various underlying developments, and we cannot know yet what has happened to many of these companies. Four of the companies have merged with others, and six of the companies have been declared dissolved. The remaining 46 companies may be on their way out of the country, facing incipient bankruptcy, or the company may simply be having a period of inactivity.

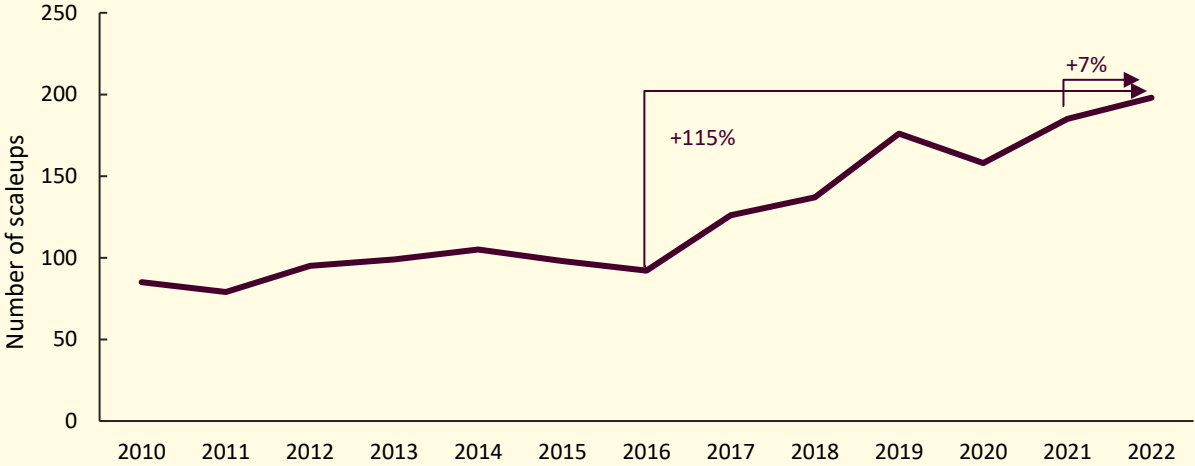
2 Scaleups in the Oslo region

At present, the Oslo region is home to 198 scaleups, which contributed with a value creation of more than NOK 9,2 billion and employed over 9,800 persons. Most of these are located in Oslo municipality. The industries that are distinguished by many scaleups are technology companies and knowledge services.

2.1 Number of scaleups in the Oslo region continues to grow

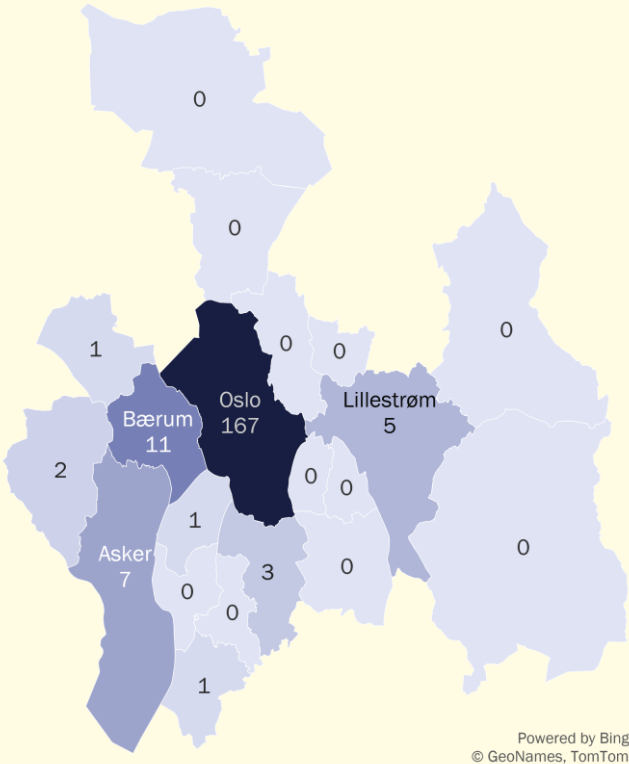
Over time, there has been significant growth in the number of innovative scaleups in the Oslo region. Since 2016, the number has more than doubled, despite a decline in 2020. From last year, the number has risen by 7 percent. The figure below shows the development since 2010.

Figure 10: Development in the number of scaleups in the Oslo region. 2010-2022. Source: Menon Economics



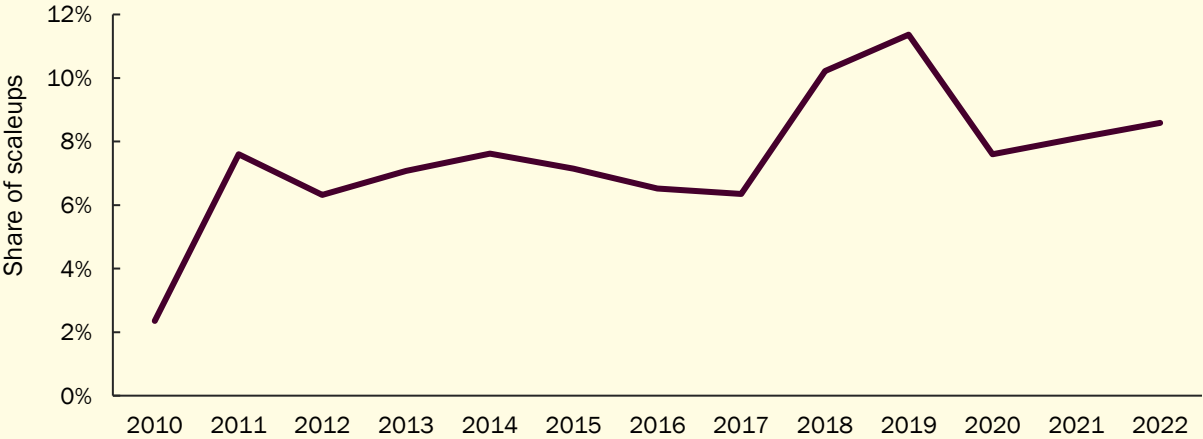
Compared to the population of startups in the Oslo region, the scaleups are much more concentrated in Oslo municipality. Figure 11 shows the distribution of scaleups on the municipalities in the area. In Oslo, there are 167 scaleups, almost 85 percent of the population. Outside Oslo, the majority of scaleups are located in either Bærum, Asker or Lillestrøm.

Figure 11: Scaleups in the Oslo region, distributed according to municipality. Source: Menon Economics



When companies experience growth and need labor, it is natural to locate the company in a large city where access to talent is best. This is also part of the explanation why a larger share of scaleups have moved to the Oslo region compared to startups. The figure below shows the development in the share of scaleups that earlier have been located outside the region.

Figure 12: Share of scaleups in the Oslo region that were located outside the region earlier. Source: Menon Economics



The number of scaleups that moved to the region fell in 2020, after a period of two years with a relatively high number of companies moving in. The fall may partly be due to the corona pandemic, which may have made relocation to the capital less attractive for entrepreneurs. Tighter restrictions in Oslo compared to other locations in the country made it less attractive for the population to move to Oslo, and this may also have applied to the business and industry sector, which was not able to benefit from the advantages Oslo has to

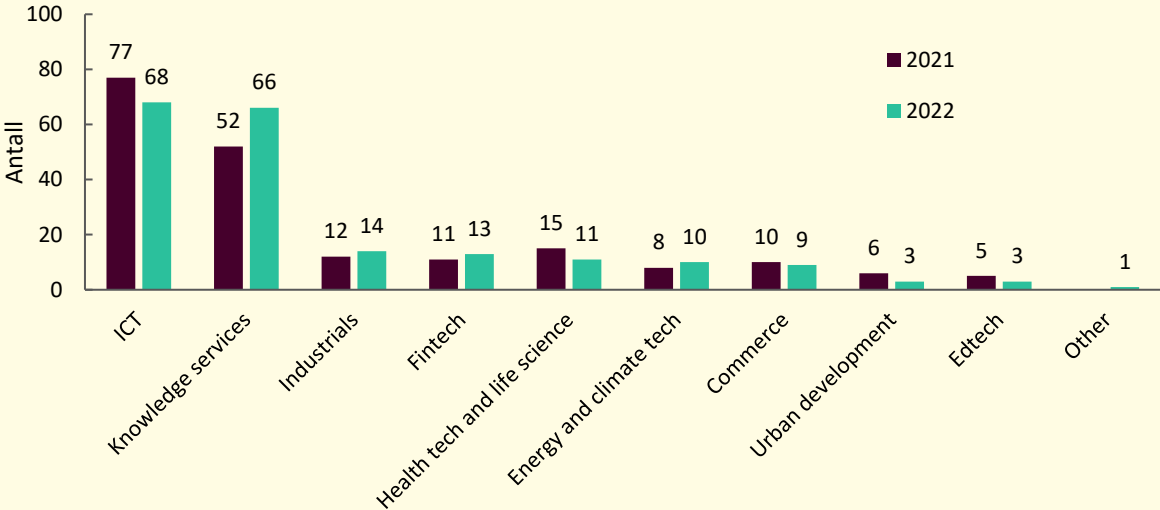
offer in the form of physical proximity to other scaleups and investors. The share of scaleups that moved to the region from other locations has been rising since 2020 and was at 9 percent in 2022.

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 the 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 13 shows how the scaleups were distributed between industries in 2022. ICT and knowledge services⁷ are the industries that dominate the population of scaleups, with 68 companies (34%) and 66 companies (33%) respectively.

Figure 13: Scaleups distributed according to industry in 2022. Source: Menon Economics



In the ICT industry, we find a wide range of companies, from companies such as Tripletex which makes digital accounting software, employed almost 300 people and had sales of NOK 740 million in 2022, to the unicorn companies such as Remarkable.

In the knowledge services industry, we find companies such as the architectural firm Snøhetta. Amongst other growth industries in the Oslo region, we find industrials, financial technology, health and life science, technology centered around commerce, energy and climate, urban development and education. These industries encompass a wide range of companies, from Oda in the trade industry, to the vaccine company Nykode Therapeutics, and the money transfer service Neonomics in the financial technology industry.

Since 2021, the largest fluctuations have taken place in ICT and knowledge services, which respectively fell and increased with approximately ten from one year to the next. The changes in other industries were smaller,

⁷ See the appendix for an overview and which industries are categorized as knowledge services.

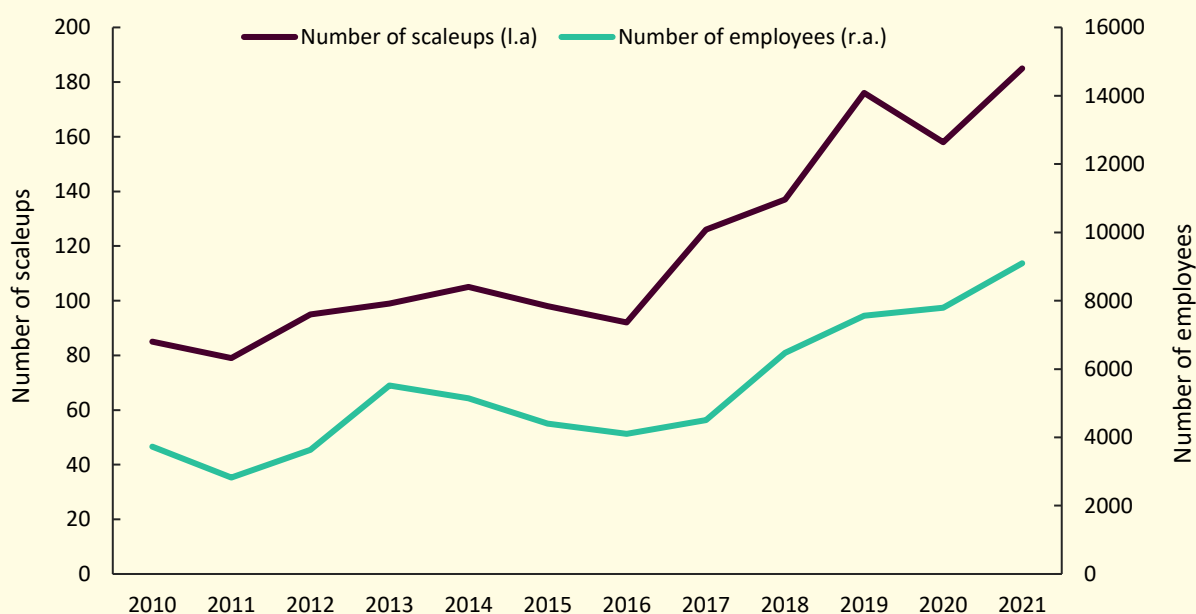
but the number of scaleups in industrials and fintech rose, while health and life sciences, commerce and urban development fell.

2.3 Scaleups' contribution to growth

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.⁸ On the other hand, difficulties in obtaining qualified labour are pointed out as a challenge.

Figure 14 shows the development in the number of scaleups in the Oslo region, and the number of employees in these companies since 2011.

Figure 14: Number of scaleups in the Oslo region and number of employees in these companies. 2010-2022. Source: Menon Economics

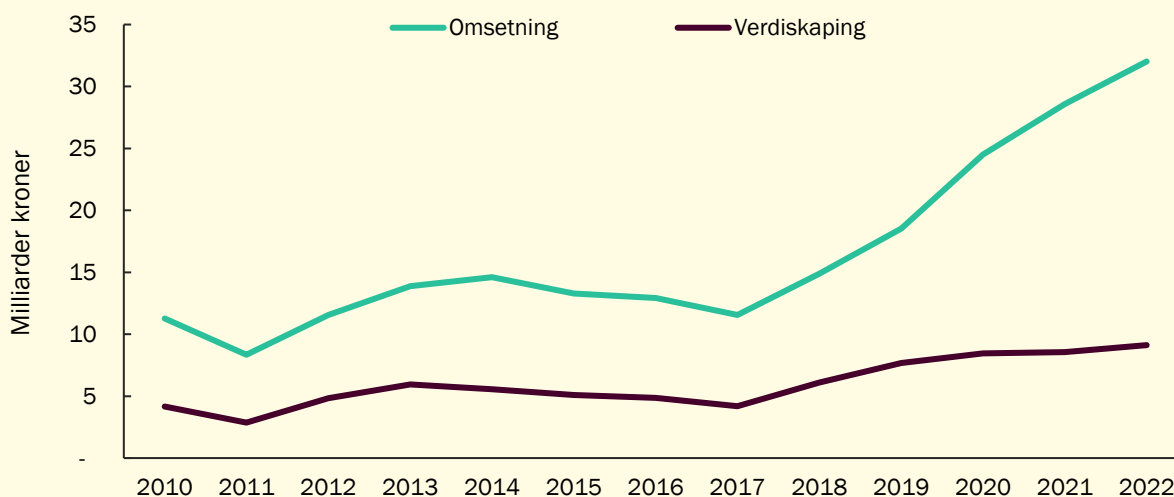


As the number of companies has increased, the number of employees in scaleups in the Oslo region has also grown significantly, and more than doubled with a growth of 133 percent since 2016. In 2022, innovative scaleups employed 9800 people. On average, each scaleup employs more people than five years 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 15 shows the sales revenue and value creation in scaleups in the Oslo region over time. In 2022, the companies had sales revenues of NOK 32 billion, an increase of almost 150 percent since 2016. The value creation from the companies was NOK 9.2 billion, a growth of almost 90 percent since 2016.

⁸ Menon (2018): Vekstvilkår for norske scale-ups

Figure 15: Sales and value creation in scaleups in the Oslo region over time. 2010-2022. Source: Menon Economics

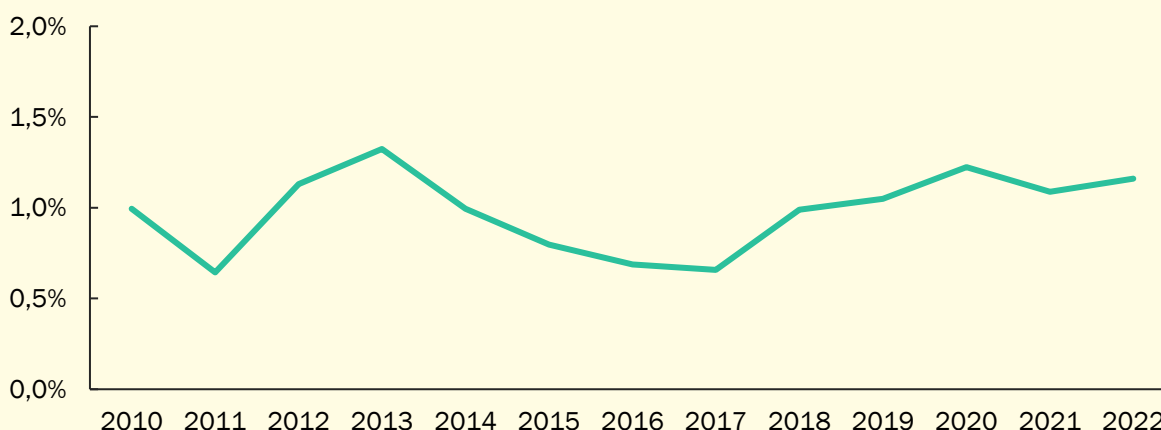


From 2011 to 2013, there was growth in both the companies' revenue and value creation, before a fall between 2013 and 2017. From 2017 onwards, the development has accelerated, with significant growth in value creation and revenue in scaleups.

Revenue and value creation in the population of scaleups vary 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 revenue and value creation are growing over time, in line with the number of scaleups.

The figure below shows the value creation in the scaleups in the Oslo region as a share of Oslo's overall value creation. The scaleups' value creation accounts for 1 percent of Oslo's total value creation on average. In 2022, this share was 1.2 percent.

Figure 16: Scaleups' share of total value creation in Oslo municipality. Source: Menon Economics

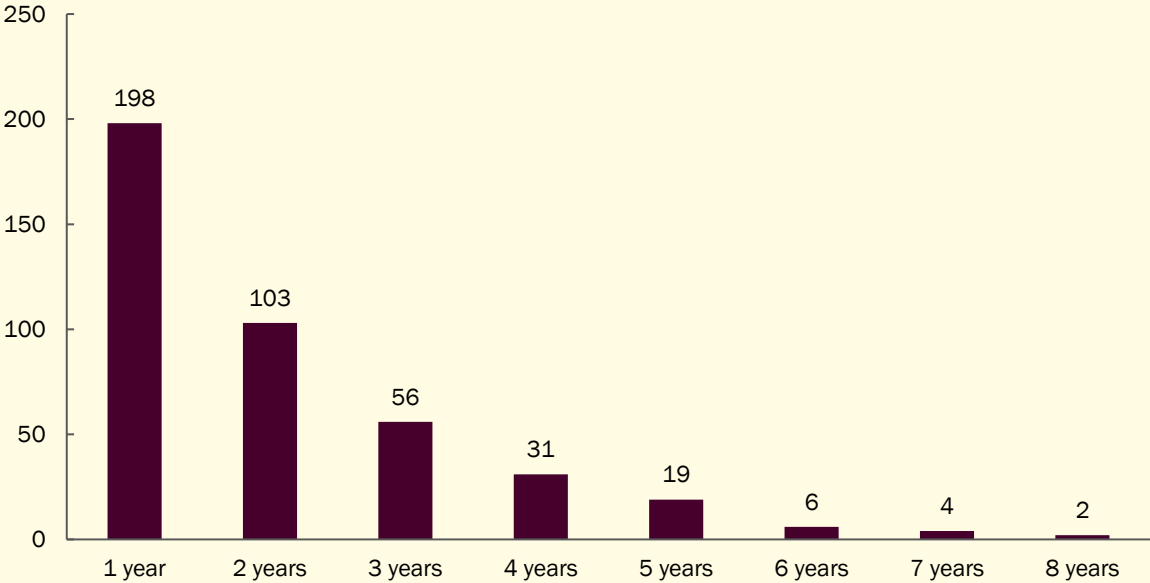


2.3.1 Continuous high growth is a rare commodity

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 2022 have shown consistent high growth in recent years. The figure below shows for how many years in a row they have been classified as a scaleup.

Figure 17: Number of consecutive years as scaleups, among scaleups in 2022. Source: Menon Economics



The figure shows that almost half of scaleups in 2022 were not defined as a scaleup in 2021.⁹ Out of the 198 innovative scaleups in 2022, only 103 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. Only one of the companies grew enough to be called a scaleup for more than eight consecutive years. This company was Knowit Dataess. The company’s value creation has grown by more than 1100 percent since 2014 and reached NOK 175 million in 2022.

Among the companies that are scaleups in 2022, three others have managed to maintain very high growth all the way since 2016 or earlier: Gelato (since 2015), House of Control (2016) and Admincontrol (2016). Admincontrol exceeded NOK 200 million in value creation in 2022, and Visma announced in 2022 an intention to buy House of Control for NOK 689 million, a price that at the time of the announcement was 60 percent higher than the company’s share price.

The scaleups in 2022 have already created significant value. In total, these 198 companies have created 9800 jobs and a value added of NOK 9.2 billion in the course of the last decade. Considering how difficult it is to maintain a high growth rate over time, it is likely that many of the scaleups in 2022 will stagnate or be bought up. For this reason, a high rate of turnover in next year’s population of scaleups is expected.

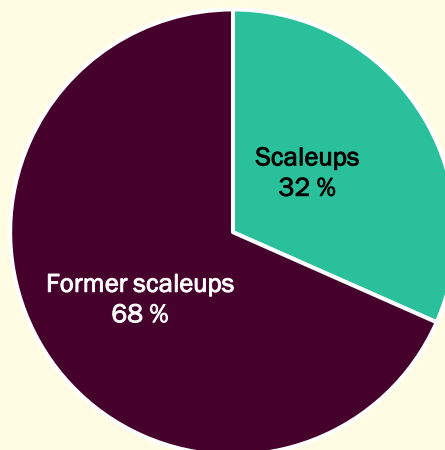
The scaleups contribute with high value creation, but the dropout rate in the population is very large. If we also include value creation from companies that were identified as scaleups in the period from 2012-2022, we can see the total contribution to value creation in the Oslo region made by innovative scaleups.

⁹ They may however have been defined as such in 2020 for example, or earlier.

In total, present and former scaleups created value added of NOK 29 billion in 2022

The value creation occurred in a total of 765 companies, of which 567 were former growth companies.

Figure 18: Value creation in 2022 distributed on present scaleups (in 2022) and former scaleups (in the period 2012-2021). Source: Menon Economics



Almost 70 percent of value creation took place in companies that no longer were scaleups in 2022. Many of these companies are continuing to grow, but at a slower rate than earlier. This means that they are no longer part of our population. The reasons for companies dropping out of the scaleup population are many. From 2021 to 2022, 47 companies dropped out of the population because they exceeded the age limit for this type of company (10 years). 56 companies fell out of the population due to inactivity, and 4 companies were merged with others.

2.4 Development after the startup phase

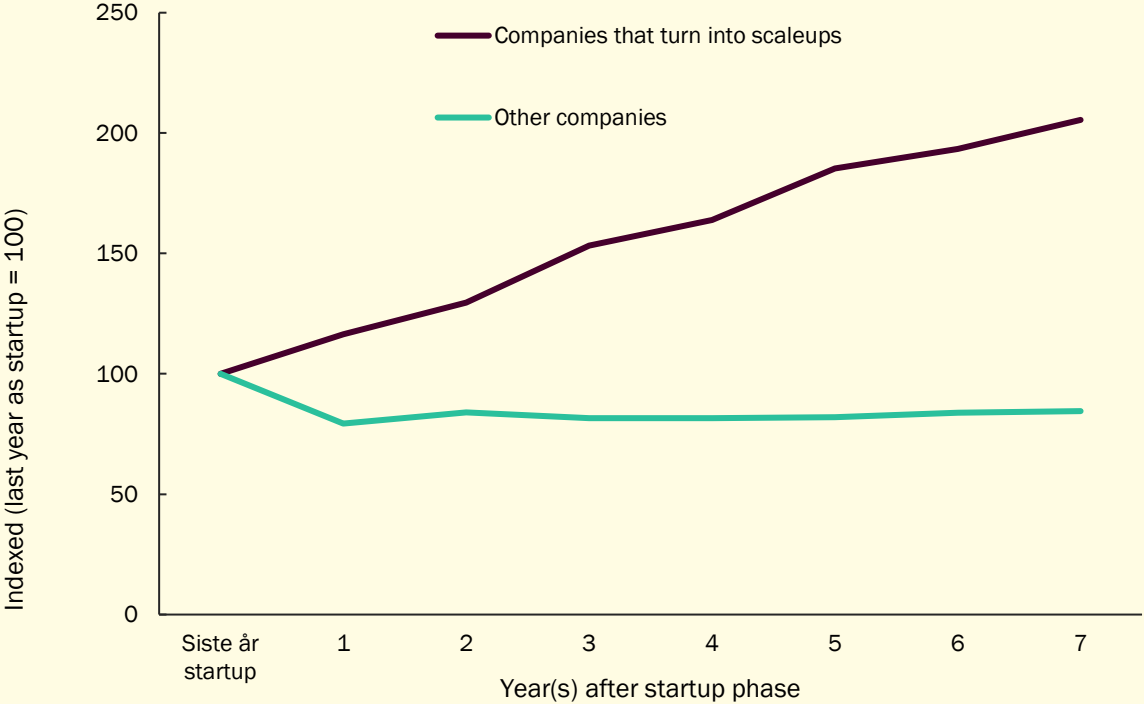
Very few startups turn into scaleups, as many good ideas do not succeed, and very few startups ever reach 10 employees and the growth phase. In order to examine the development of the identified companies in the period after the start-up phase, we have looked at how their employment and value creation develop afterwards. We divide the group into two: those companies which later become scaleups, and those which do not.

We have looked at the development from the companies' last year as a startup and five years ahead in time for the two groups.¹⁰ The startups that turn into scaleups have already in their last year as a startup significantly higher employment, value creation and sales revenue compared to the rest of the companies.

¹⁰ Utvalget begrenser seg til selskap som har registrert fem år med utvikling etter oppstartsfasen (inntil seks år gamle).

The figure below shows how employment develops for those companies that later become scaleups, and those that do not. The development is indexed to enable comparison.

Figure 19: Indexed development in average employment after the startup phase, divided by companies that later become scaleups and other companies. Indexed to 100 for the last year in the startup phase. Source: Menon Economics



In the period after the startup phase, the companies that later become scaleups show significant growth, as expected. Five years after the startup phase, the companies on average have 85 percent higher employment. The development for those which do not become scaleups is, however, weak the first year after the startup phase, with a fall in employment of 20 percent. In the following year, the development in employment among the other companies is stable, but on average remains lower than in the startup phase. Overall, there is a clear distinction between those companies that manage to grow and later become scaleups, while the other companies have a flat development over time.

3 Access to capital for startups and scaleups in the early phase

Early-stage companies in the Oslo region are attracting more and more capital. Compared to its Nordic neighbours, access to capital in the early phase has improved, as there is an increasing number of scaleups and new investment funds in Oslo. Over the past three years, companies in Oslo have attracted a total of 4.4 billion euros in venture investments.

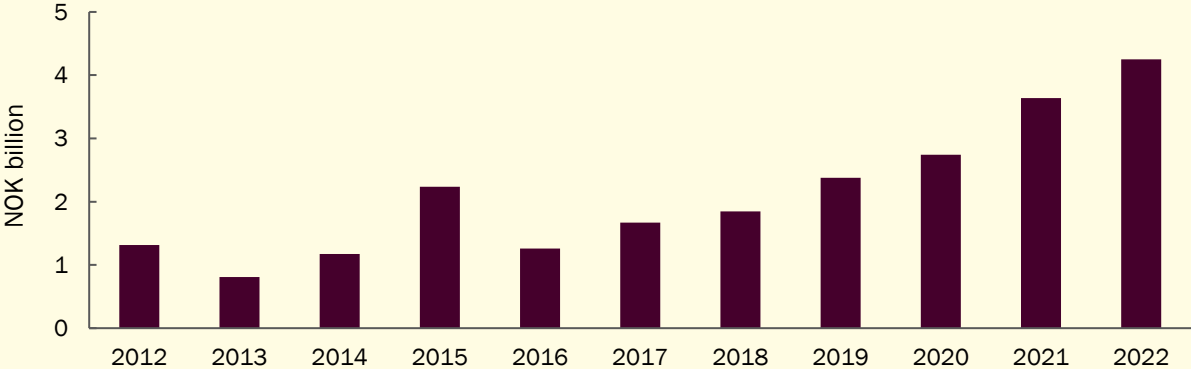
The ecosystem for entrepreneurship, with startups and scaleups, is entirely dependent on access to capital to finance technological development and commercialization. In most cases, financing from investors is a prerequisite for successful innovation, and the need for capital in the development and commercialization phase tends to be large.

Using statistics from various sources, we here illuminate the access to capital in the form of investments into startups and scaleups. We focus on the early-stage phase, also known as seed and venture capital. We look at access to capital based on a number of sources, also relative to the other Nordic capitals.

3.1 Access to capital has improved over time

With the help of Menon’s database over accounting figures 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 capital¹¹ has developed over time among startups.

Figure 20: Startups – Development in paid-in capital over time. 2012-2022. Source: Menon Economics

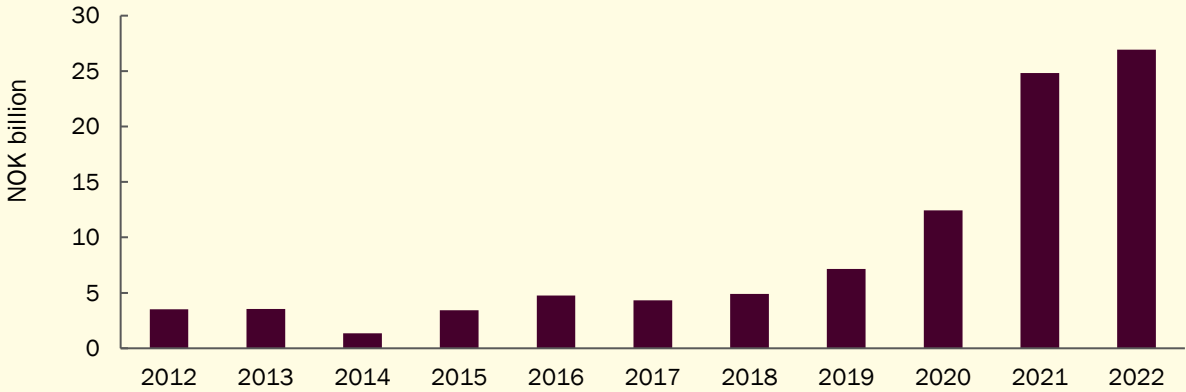


Paid-in capital in startups has increased significantly over the six last years, with stable growth since 2016. In 2016, there was NOK 1.3 billion in paid-in capital in startups, and in 2022, this had risen to NOK 4.3 billion. The growth in paid-in capital in has been higher than the growth in the number of companies, so that paid-in capital per startup has increased markedly.

In addition, we have looked at paid-in capital in the identified scaleups, and the development over time is shown in the figure below.

¹¹ Paid-in capital is the full amount of cash or other assets that shareholders have paid a company in exchange for shares of its stock.

Figure 21: Scaleups – Development in paid-in capital over time. 2012-2022. Source: Menon Economics



In 2022, the scaleups in the Oslo region had NOK 26.9 billion in paid-in capital, up from NOK 24.8 billion in the previous year. Compared to 2020 and 2021, when growth was very high, there was moderate growth from in 2022. In the period from 2018 to 2021, the number of IPOs by Norwegian scaleups was very high and this was seen as an attractive way of raising capital. In 2022, interest in growth shares on the stock exchange waned, and this has persisted into 2023. At the same time, the underlying growth in the number of scaleups means that overall, paid-in capital is growing.

There are many indications that access to capital has improved in recent years. National statistics from private equity funds show an increase in the amounts invested in the seed and venture phases, particularly in recent years.¹² Additionally, 60 new investment instruments aimed at companies in the startup and growth phases have been introduced.¹³ A large proportion of the capital supplied to growth companies is international capital. This applies to both unlisted and listed companies. On the various marketplaces of the Oslo Stock Exchange, foreign investors own 41.2 percent of the share values in 2023.¹⁴ Similarly, foreign investors constitute a significant portion of the capital supplied through venture funds.¹⁵

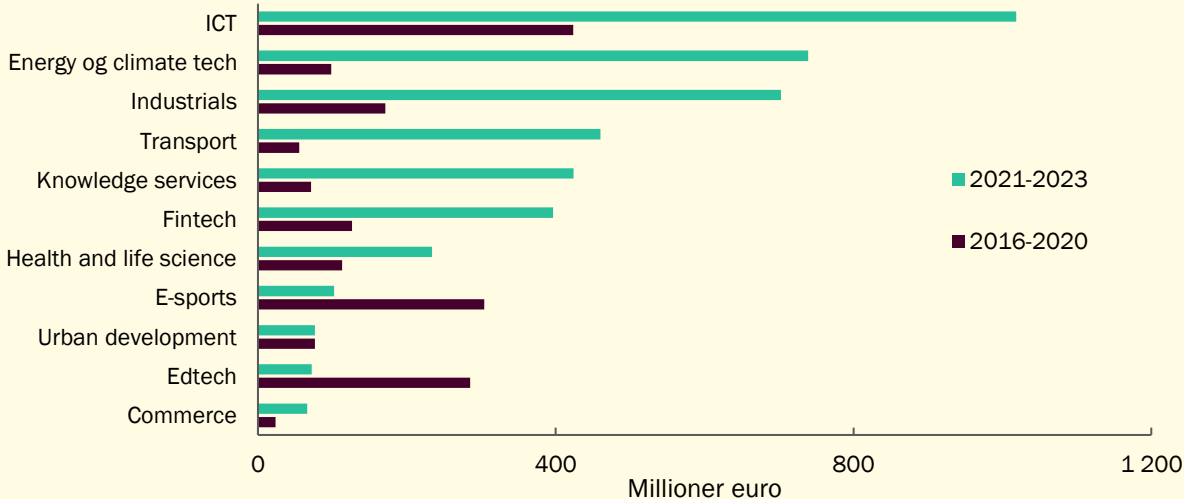
While development seems to be moving in the right direction in the earliest phases, there are many companies that experience challenges related to access to capital in the scaling phase where there are negative operating results without the possibility of financing growth without external capital. This phase is often referred to as the "valley of death". Many Norwegian entrepreneurs state that they lack this capital needed for growth. A relatively small proportion of the capital in later stage venture comes from Norwegian investors, which may indicate that there is limited access to growth capital from Norwegian venture funds.¹⁶ Furthermore, there are many who struggle to obtain pilot customers from the established business and industry sector, often as a result of weak links between the R&D communities and start-up environments on the one hand, and the established business world on the other. The combination of lack of growth capital and pilot customers makes it challenging for many companies to get through the "valley of death". While the apparatus of public financing instruments has a number of schemes aimed at companies in the start-up phase, there are relatively few instruments aimed at this growth phase.

¹² Menon (2022b): *Private Equity Funds in Norway*
¹³ *The evaluation of Innovation Norway’s funding for early-phase companies identified 60 new funding instruments in the form of funds and investment frameworks targeted at companies in the startup and scaleup phase. In total, capital of NOK 16 billion aimed at the early phase was identified in the period from 2015 to 2021*
¹⁴ <https://aksjenorge.no/aktuelt/2023/04/20/eierskap-pa-oslo-bors/>
¹⁵ Menon (2023): *Private Equity Funds in Norway*
¹⁶ <https://dealroom.co/guides/nordics>

3.2 Access to capital is improving for energy and climate technology – only the ICT industry attracts more

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 6 billion in the period 2016-2023. Of these, EUR 4.3 billion were invested in the period from 2021 to 2023.¹⁷ In the figure below, we show how total investments are distributed across industries.

Figure 22: Investments in the Oslo region according to industries from 2016 to 2023. Includes investments into both startups and scaleups. EUR million. Source: Dealroom.co¹⁸



In the last years, companies in the ICT industry have attracted the most capital with EUR 1 billion in the period 2021-2023, followed by energy and climate technology at EUR 740 million and industrials at EUR 700 million. Among the big funding rounds within the ICT industry we find Ardoq and Unleash. Within energy and climate technology, Morrow has raised significant amounts of capital, in addition to Hydrogen Mem-tech and Otovo. Compared to the earlier period, the gap between ICT and energy and climate technology has decreased significantly, showing that more early-phase investments are flowing into these industries. In addition, both knowledge services, transport, and financial technology have attracted significant investment since 2021, with large funding rounds in companies such as Dune Analytics (fintech) and Xeneta (transport). The industries have also experienced significant growth compared to the period 2016-2020.

Health and life science has not grown as much but received more than EUR 230 million in investments since 2021 with investments in Nordic Nanovector and No Isolation, amongst others. Within e-sport and gaming as well as education technology, however, the investment level has fallen in the period 2021-2023, compared to 2016-2020. Within urban development, the level has been stable.

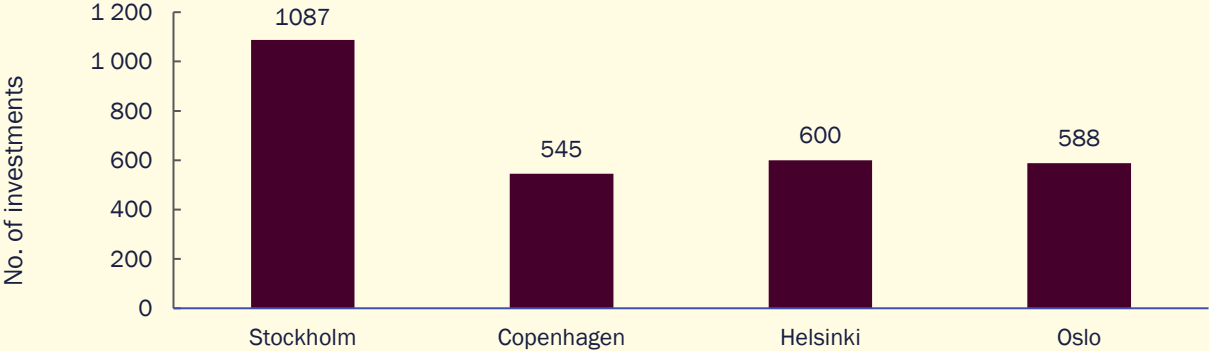
3.3 The investor community in Oslo compared to its Nordic neighbours

To assess access to capital in the Oslo region compared to the other Nordic capital regions, we have used statistics from Dealroom. Dealroom maps investments globally and enables comparison between the Nordic

¹⁷ Data for 2023 were extracted from Dealroom.co in October 2023.
¹⁸ Some companies are tagged in two industries and will thus be double-counted.

capitals. In the figure below, we show the number of investments in venture companies in the four capital regions in the period 2020-2022.

Figure 23: Number of investments in venture companies in the Nordic capital regions in the period 2020-2022. Source: Dealroom.com

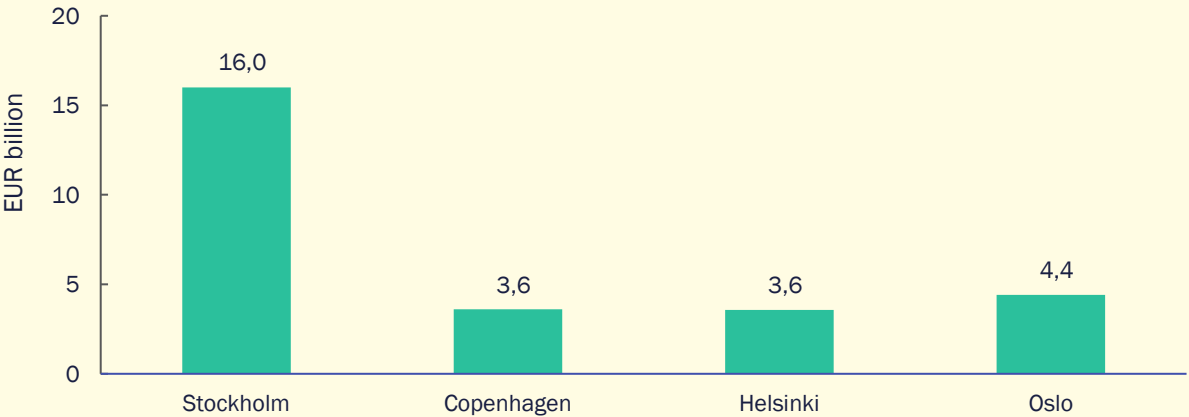


Compared to Stockholm, the investment level in both Oslo, Copenhagen and Helsinki is much lower, with approximately 40-50 percent fewer investments. Stockholm has a more mature startup ecosystem and has over time been the Nordic locomotive within the growth of innovative companies and a well-developed market for risk capital with good access to capital.

In the period from 2020 to 2022, investment activity measured in number of investments in Oslo has been marginally lower than in Helsinki, and somewhat higher than in Copenhagen. Traditionally, Oslo has been behind both these cities when it comes to venture investments, but in recent years, Oslo has been catching up, which is also reflected in the statistics from recent years.

When looking at the amount of capital that is invested, the difference between Stockholm and the Nordic neighbours becomes even larger, as shown in the figure below.

Figure 24: Invested amount of capital in venture companies in the Nordic capital regions in the period 2020-2022. EUR billion. Source: Dealroom.co



Companies in Oslo have over the three years from 2020 to 2022 attracted as much as EUR 4.4 billion in venture investments. This is however still a long way from the level in Stockholm, where venture companies have received EUR 16 billion in total. Compared to Copenhagen and Helsinki, which had EUR 3.6 billion invested in venture companies, the level is 22 percent higher in Oslo. This underlines even further that Oslo's environment for risk capital has developed and that innovative companies in the early phase now have better access to capital relatively speaking.

Appendix

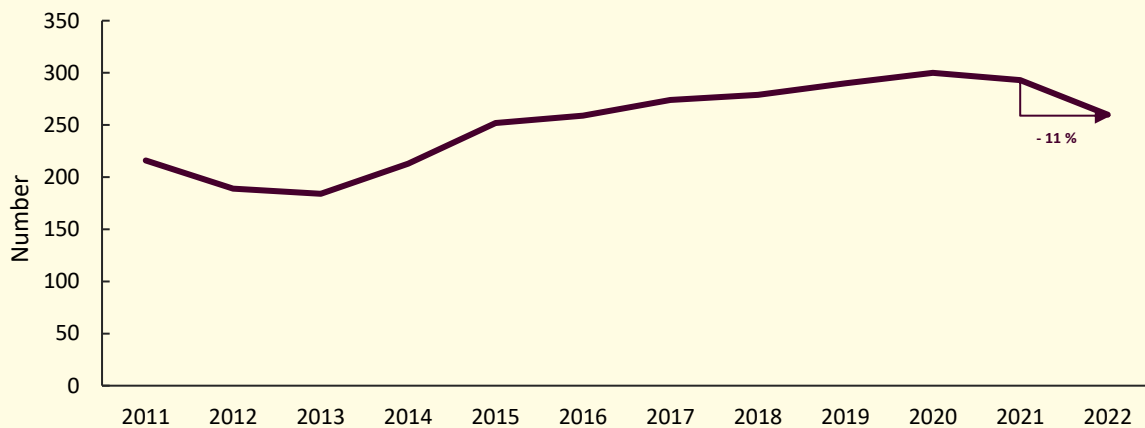
Capital and R&D-intensive startups

The majority of startups are identified by belonging to a knowledge-intensive industry¹⁹. Norway is a country with a high level of education overall, and therefore many industries are defined as knowledge-intensive.

To focus more narrowly on innovative startups with growth ambitions, we now look at startups that are considered innovative, that follow a j-curve development or are capital intensive²⁰. With these criteria, we identify 260 startups. These are precise indicators for both growth ambitions and growth potential, and the companies in the groups are either capital intensive²¹ and/or R&D-intensive²². At the same time, we exclude the clearly broadest and least precise indicator for identifying innovative startups with growth ambitions.

The development in the number of startups based on these indicators is shown in the figure below.

Figure 25: Development in the number of startups in the Oslo region that are innovative, follow a j-curve or are capital intensive. Source: Menon Economics



In this group, there has been a reduction in the number of identified startups of 11 percent since 2021. The number has fallen since 2020, after a general rise since 2013. The number of companies following a j-curve development is increasing and has grown by 33 percent since 2020. This type of company therefore makes up a larger and larger proportion of startups. At the same time, there are fewer companies that are identified as innovative through having active SkatteFUNN-projects in 2022. There was a general decrease in the number of SkatteFUNN projects during the pandemic, which may be due to fewer companies having the capacity for research and development projects during this period.

The value creation in these companies also clearly differs from startups as a whole. The development in value creation and employment in these startups is illustrated in Figure 26.

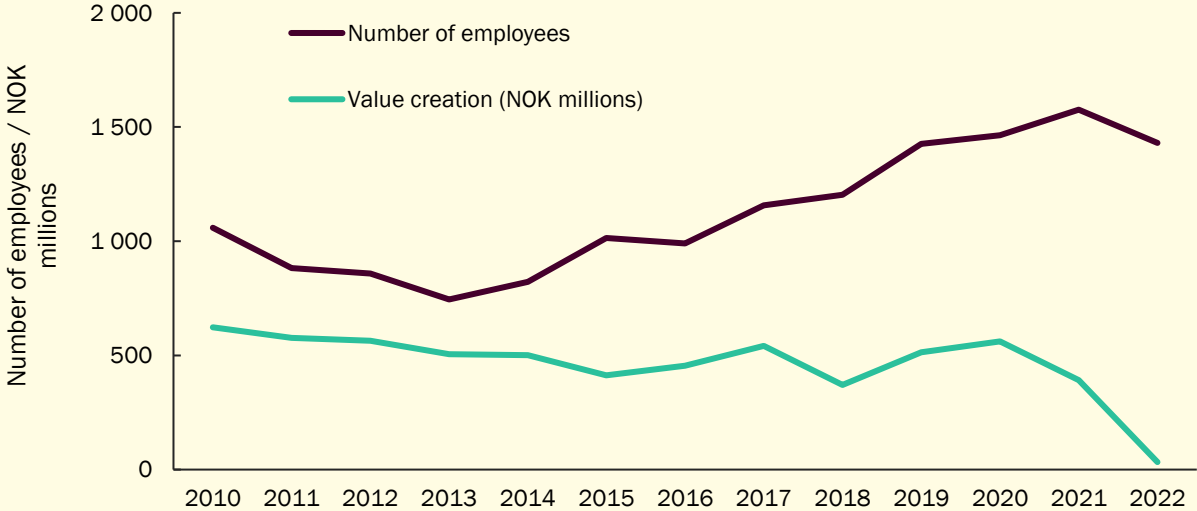
¹⁹ I.e., an industry where more than 33 percent of employees has a higher education than a bachelor's degree.

²⁰ See the full overview over our criteria to be categorized as a startup in the appendix.

²¹ Capital intensive companies need for a lot of capital as an input factor in production. Typically, they will need to make considerable investments in development and/or fixed assets to produce the products, preferably financed with external equity capital.

²² Companies that need to make a significant R&D-effort in product development

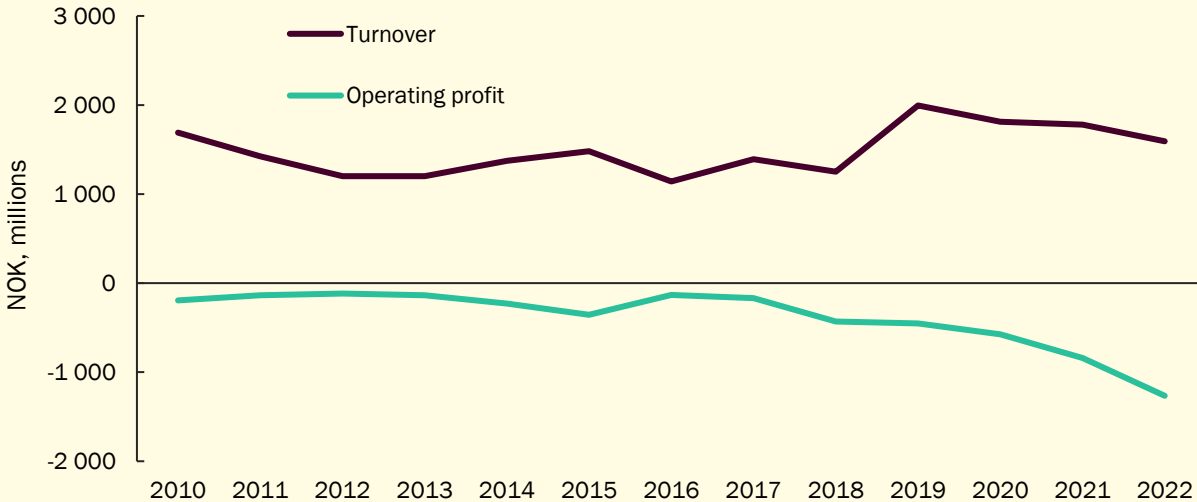
Figure 26: Development in value creation in startups (excl. companies that only qualify by belonging to a knowledge intensive industry) in the Oslo region. 2010-2022. Source: Menon Economics



In this part of the startup population in the Oslo region, value creation has fallen drastically, not only in 2022, but also from 2020 to 2021. Since the peak in 2020, value creation in this group has fallen by 94 percent. In contrast to value creation, employment in the group increased in 2021, before it also fell in 2022, then by only 12 percent. Since 2013, the number of people employed has risen rapidly, and these startups employ on average just over five people each in 2022. For startups as a whole (including those that only qualify by belonging to a knowledge-intensive industry) there is an average of just over two people employed per company. In other words, this slightly smaller part of the population employs a larger share of people than would be proportional.

Part of the reason for the fall in value creation is the fall in the number of companies, but as we can see, value creation also fell in a year when the number of companies rose. Figure 27 shows the development in revenue and operating profit in the same group of startups.

Figure 27: Development in sales revenue and operating profit in startups (excl. companies that only qualify by belonging to a knowledge intensive industry) in the Oslo region. 2010-2022. Source: Menon Economics



Here we see that the operating result in this group of startups as a whole has always been negative and this development has continually increased since 2017. We also see that the sales revenue in these companies has been relatively stable over time, but has fallen somewhat in recent years. The falling value creation

therefore comes primarily from the fact that startups in the Oslo region are increasingly operating at a loss. The reason for this may be that access to risk capital has improved over time, and thus investors are more willing than before to invest into companies that require larger investments and development phases while running at a loss. A high willingness to accept losses is a sign that expectations for value creation and growth in the future are high from investors.

Method for identifying startups and scaleups

Startups

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. To identify startups we therefore apply several criteria to catch the characteristics of startups with growth potential. The criteria to identify startups are summarized in the textbox below²³.

Definition of startups with growth potential

Startups are from 2-5 years of age since the first year of economic activity, 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 the definition above, we have identified 1,855 startups in the Oslo region. 99 percent of these are within knowledge-intensive²⁴ NACE-codes (criterion a). Furthermore, 9 percent have qualified for SkatteFUNN (criterion b)²⁵. About 3 percent of the startups are j-curve companies (criterion c), while 6 percent have raised additional capital (criterion d).

Table 0-1: Number of identified innovative startups with growth potential in 2022. Source: Menon Economics

Criterion	No. of companies	Share of startups
Knowledge intensive industries	1 843	99.4%
J-curve	83	4.5%
SkatteFUNN	169	9.1%
Paid-in capital	106	5.7%
Sum	1 855	100%

²³ 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.

²⁴ See complete list of knowledge intensive industries (NACE-codes) in the appendix Industry categorization.

²⁵ SkatteFUNN is a rights-based tax credit scheme for companies that invest into R&D.

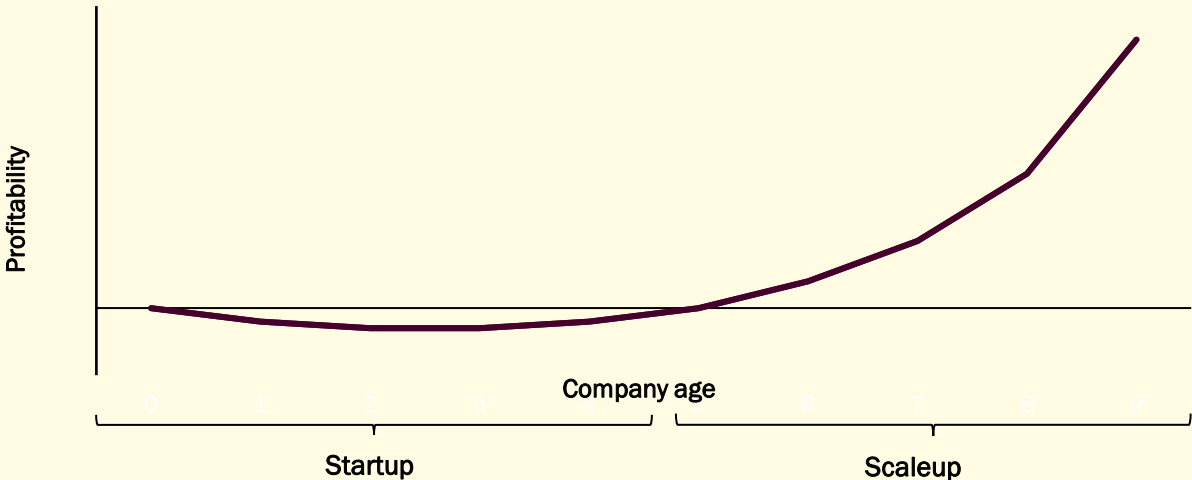
Scaleups

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.²⁶

There is a fundamental difference between a startup and a scaleup. We have attempted to illustrate this difference in Figure 28 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 at a loss. These investments lay the foundation for future growth and value creation.

Figure 28: Profitability development in a j-curve company



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.

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,

²⁶ 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. In this way, our definitions are operational, enabling us to count the number of companies that sort under the different definitions.

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. 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.²⁷

Here we want to further narrow down 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 criterion 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 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 198 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).

Table 0-2: Number of identified scaleups with growth potential in 2022. Source: Menon Economics

Criterion	No. of companies	Share of scaleups
Knowledge intensive industries	182	92%
SkatteFUNN	124	63%
Paid-in capital	91	46%
Sum	198	100%

²⁷ 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.

²⁸ See complete list of knowledge intensive industries (NACE-codes) in the appendix Industry categorization.

Industry classification

Table 0-3: 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 tele-communication and producers of semiconductors. Companies placed in this industry have no clear connection to value chains in specific industries. Among the startups in the industry we find companies such as the software firm IndyRiot, or AppFarm, which make it possible for their customers to develop business applications without having to code themselves.
Knowledge services	A broad range of specialized services aimed at both the business and industry sector and consumers. For example consultants, architects or companies that offer professional services.
Health 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.
Læringsteknologi	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.

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 in under the various definitions. Menon's proprietary database of accounting data consists of accounting information for all Norwegian companies from the Brønnøysund registers from 1992 to 2021. Accounting data has been obtained from Dun&Bradstreet. Unconsolidated 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 0-4: 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 Norway²⁹

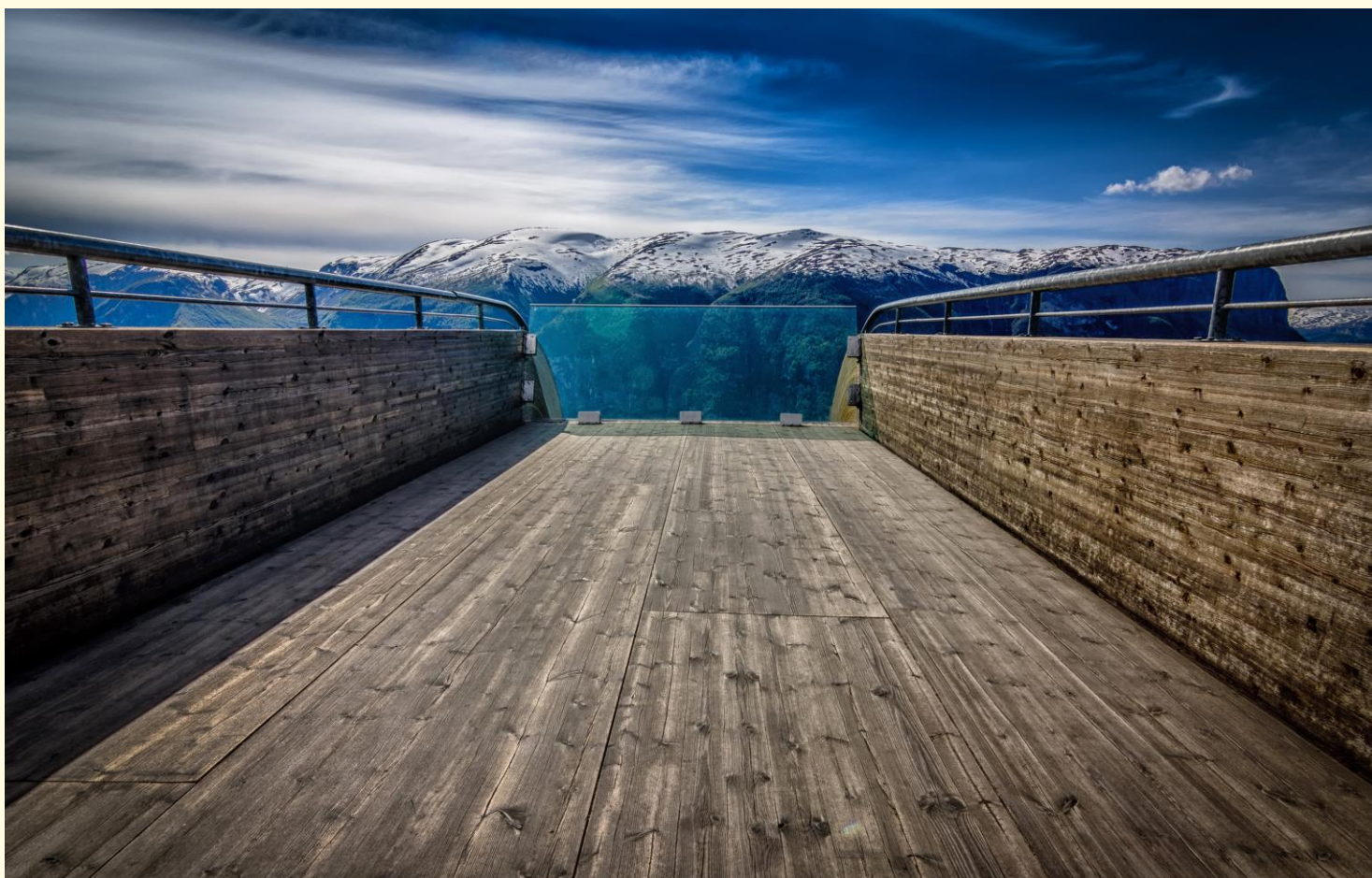
NACE Rev. 2 Division	Name
6	Mining and quarrying
9	Mining and quarrying
20	Manufacture of chemicals and chemical products
21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
26	Manufacture of computer, electronic and optical products
35	Electricity, gas, steam and air conditioning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

²⁹ Berg, L. P. (2016). Kunnskapsintensive næringer i Norge.

Definition of the Oslo region

Table 0-5: 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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