MENON ECONOMICS

EXECUTIVE SUMMARY OF THE REPORT

THE VALUE OF THE HEALTH INDUSTRY

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Content

Preface

The leading players in Norwegian health tech and life science came together in 2016 for the first time to prepare a report that describes the Norwegian health industry in figures. This 2017 report builds on the 2016 report, this year's report presenting updated figures and broader underlying data. We, in this report, have also focussed on a broader perspective and placing the health industry in the larger societal context.

This report aims to describe the scope of the health industry, its development and its contribution to Norwegian society. The report therefore extends across a wide range of themes. We calculate the health industry's value creation, revenue, job creation, productivity and profitability. We measure total research and innovation results in the health industry and we uncover entrepreneurial companies' capital requirement, the health industry's growth bottlenecks and internationalisation. We furthermore measure the health industry's exports and the benefits the health industry brings to society.

An updated and complete value creation analysis of the health industry in Norway gives the industry and all its partners a common system of concepts and a common set of figures. Both are crucial if we are to be able to communicate effectively about the health industry in Norway. Common concepts and figures are, of course, important to the health industry. They are, however, also important in the policy design process carried out by authorities and in knowledge-based public debates.

This report is backed by a broad consortium of health sector organisations, whose support has been of key importance to the report. The participants in the consortium are:

- Abelia
- Inven2
- Legemiddelindustriens Landsforening (LMI)
- Nansen Neuroscience Network
- Norwegian Smart Care Cluster
- The Confederation of Norwegian Enterprise (NHO)
- Oslo Cancer Cluster
- Oslo Medtech
- NHO Service
- Innovation Norway
- The Research Council of Norway

We would like to thank the consortium and the many companies who took part in the questionnaire survey for their participation and for their useful feedback.

Menon Economics is fully responsible for the contents of this report.

Oslo, 20 April 2017

Project leader Erik W. Jakobsen

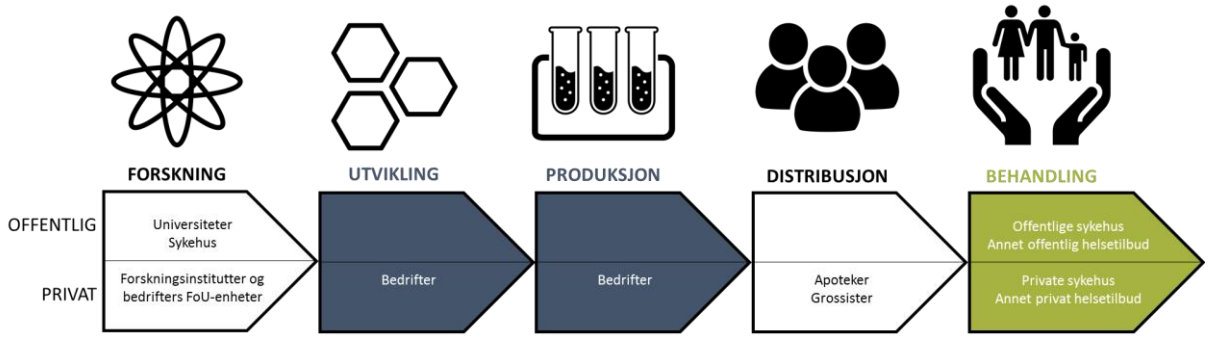
Summary

This report describes the health industry value chain, including public and private actors, in figures. The report focuses on the health industry's contribution in terms of *value creation*.

The health industry's contribution in terms of social economic value for citizens and the public health service is believed to be greater than the value creation measured in terms of jobs and tax revenues.

1. Changes in health tech and life science growth rates

Last year's report showed that health tech and life science's total revenue growth in 2015 was 11 percent. Growth rate expectations for 2016 are even higher and significantly higher than those of the previous decade. High rates of growth combined with high levels of investment in R&D and a substantial increase in new start-up businesses has led to the question of whether health tech and life science is on the cusp of a change in tempo. This year, we can confirm that there has been a change.



This report documents the development and status of the health industry today. Our focus is, even so, primarily on the future. The welfare state will be placed under pressure in the coming decades by the elder boom and by diseases such as cancer and dementia, a pressure which is further intensified by the expected future development of the economy. The income from a number of other large industries will fall in the future. The health industry can, however, represent a double opportunity for Norway. Based on the large global and strongly growing opportunities for this sector, the health industry can grow to become a major industry in Norway. The health industry can also provide an important answer to the health and care challenges in Norway in the coming decades.

There are seven themes we would like to highlight in this report. The seven are as follows.

Total health related revenue in 2015 in health tech and life science was almost 52 billion NOK, up from 47 billion in 2014. Revenue grew by more than ten percent in 2015.

Health industry companies expect growth to continue in 2016, but that it will not be as strong as previous years. Growth is, however, expected to increase again in 2017. Companies estimate total income growth in 2016 to be more than four billion NOK and, if the prediction for 2017 is shown to be true, then income will increase by a further five billion and end up well over 61 billion NOK in 2017.

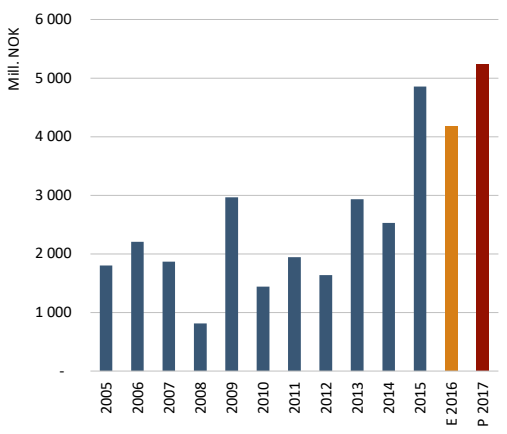


Figure 0-1: Change in revenue on previous year for health tech and life science 2005 - 2015, including estimates for 2016 and forecasts for 2017 (million NOK). Source: Menon

2. Health industry R&D 25 percent higher in 2016

The health industry is Norway's most research intensive industry. The Norwegian government's 'Research Barometer' 2015 showed that total costs for health R&D is more than the R&D costs for the oil, maritime, food and marine industries together. Most of this research is carried out by the health authorities, universities and university colleges as reflected by the 'Research Barometer' which shows that the commercial sector accounts for 1.5 billion of the 9 billion NOK spent on research. Our calculations, which are based on budgeted SkatteFUNN R&D tax incentive scheme rebates and allocation of projects funded by The Research Council of Norway, however indicate that health industry R&D was at least 2.25 billion NOK in 2016,

Explanation of terms used in the report

Health sector = Health sector in this report means all private, state and other public organisations in the entire value chain including supporting functions. This is a narrower definition than that used in Statistics Norway's healthcare and care statistics, which includes municipal and county administration, care without housing and healthcare services that are not required to be registered (sole proprietorships/self-employed etc.).

Health industry = the private part of the value chain. Does not include support functions.

Health tech and life science = the development and production of all types of medical products, technologies and solutions. It is subdivided into five groups;

- **Pharmaceuticals** – all biological and chemical products that are used to prevent and treat physical and psychological conditions and diseases.
- **Diagnostics** – all biological, chemical and technological products which are used to arrive at a diagnosis in the health sector.
- **Health ICT** – all ICT products and services used to monitor, prevent and treat diseases and health sector administrative systems and processes.
- **Medtech** – all medical-technical products which are used to prevent and treat diseases, injuries and wear.
- **Specialised sub-suppliers** of raw materials, equipment and services.

Healthcare providers = All healthcare and care services from conception to death associated with prevention, healthcare services and rehabilitation. Healthcare providers is subdivided into four groups;

- **Primary healthcare providers** – are healthcare services which are provided to the local community in everyday life. Primary healthcare providers include general practitioners, home nursing care, health visitors, physiotherapists, occupational therapists, speech therapists, dentists, other healthcare personnel such as chiropractors, company healthcare services and institutions such as nursing homes and residential care facilities for the aged.
- **Specialist healthcare providers and rehabilitation** – includes somatic and psychiatric hospitals, policlinics and healthcare service centres, recovery training and rehabilitation institutions, institutions for cross-discipline specialised healthcare services for intoxicant abuse, pre-hospital services, private practising specialists, the ambulance services and laboratory and X-ray service providers.
- **Child welfare services, psychiatric health and addictions** – includes services for protection and intervention where normal care of children is not provided and for mental health and addiction.
- **Other healthcare providers**– includes health services not included in the three categories above.

a much higher figure than the 1.5 billion indicated by the 'Research Barometer'. This also is more than the total R&D for all Norwegian industries excluding the oil industry.

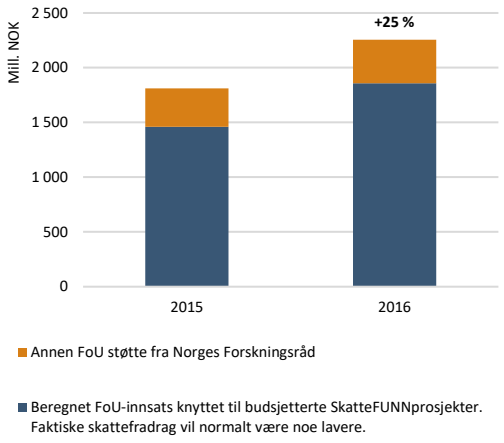


Figure 0-2: Skattefunn and other R&D funding from the Research Council for the health industry in 2015 and 2016 (million NOK). Source: The Research Council and Menon

A further 120 million NOK of R&D has also been funded by grants from Innovation Norway and by the EU and has been carried out in-house without external funding.

Most health tech and life science research is, as expected and where measured in terms of invested capital, carried out by the pharmaceuticals industry. Health ICT and medtech companies are, however, the most R&D intensive industries. Medtech and health ICT companies invested between six and seven percent of their income in research compared with a R&D intensity for all health tech and life science of a little over three percent.

The number of health tech and life science companies that carry out R&D is also high. Eight of ten health tech and life science companies carried out R&D in 2016, two out of three carrying out self-financed R&D. Four out of ten carried out joint R&D and one in three bought in R&D.

3. Strong increase in innovation activity – but poor access to risk capital makes realising the potential difficult

Significant innovation takes place in health tech and life science. The proportion of companies that innovate is also increasing, 11 percent of companies in health tech and life science meeting the requirements for being an entrepreneurial company[1]. However, only two percent of companies in the Norwegian business sector are entrepreneurial. The number of entrepreneurial companies in health tech and life science has more than doubled in the last few decades, the number in the Norwegian business sector as a whole having increased by just 50 percent in the same time period.

The larger number of entrepreneurial companies in health tech and life science and the growth in numbers are not surprising. The entrepreneurial phase is longer, is more cost intensive and risk is higher in health tech and life science than in almost any other. This is due to pharmaceutical and diagnostic product development requiring research, preclinical and clinical trials and health authority approval in all the countries the products are to be launched in. The approval process for launching a health product in other parts of health tech and life science is also much more stringent than in any other industry.

Health tech and life science companies also operate in an international industry. Successfully launching a product on the international market is, however and in most cases, much more time-consuming and capital intensive than launching in the home market. Sales and distribution systems must be established in these countries and relationships with a broad range of decision makers and partners must be built-up.

[1] *We have defined entrepreneurial companies as active companies that have no sales income or costs that are more than double income.*

The amount of capital required to launch a product is also dependent on how long the commercialisation process takes. The longer the commercialisation process takes, the more capital will be required. Access to risk capital at an early stage can reduce the research to commercialisation time (time to market) partly because processes can be carried out in *parallel* rather than *sequentially*. Reducing time to market also increases the probability of commercial success as it puts the product ahead of potential rival products.

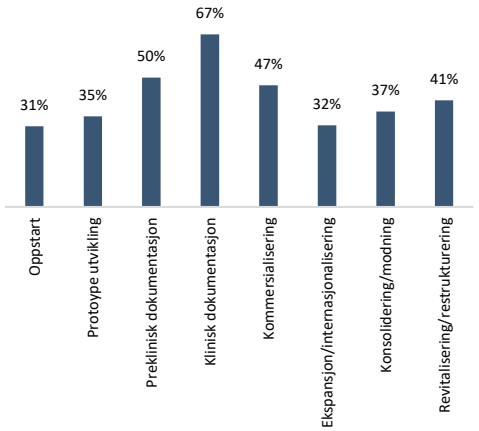


Figure 0-3: Proportion of companies that fully or partially agree that the lack of public risk relief (for example support schemes, equity or tax incentives) for prototypes and clinical documentation hinders a company's development of products. Source: Menon

Early-phase companies in health tech and life science only have a limited access to risk capital. Research parks and TTOs bring technologies, ideas and patents as far as company set-up. There is, however, a shortage of capital to fund proceeding from this stage to developing and testing products. Companies in health tech and life science emphasise that access to capital for prototypes and clinical documentation is the most significant obstacle that hinders company development. Professional investors are reluctant to invest in the early phase as risk in this phase is high. Innovation Norway has a number of ways of countering this, such as innovation loans and OFU contracts. The number granted each year is, however, limited. This shortfall can, in many cases, mean that the potential created by the enormous investment in research never fully comes to fruition.

4. Health tech and life science's experience that the public health service does not stimulate innovation

The Norwegian health tech and life science market is dominated by public procurement schemes.

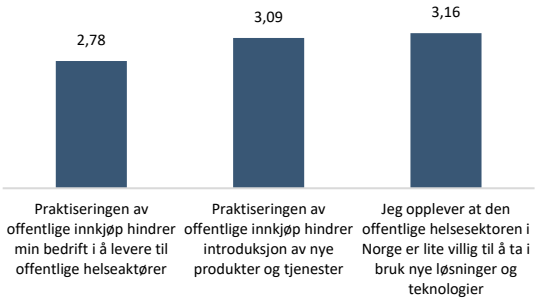


Figure 0-4: Companies' experiences of bottlenecks. Scale from 1 to 5, 1=fully agree and 5=fully disagree. Source: Menon

Almost half of all companies in health tech and life science view the public health sector as being reluctant to implement new solutions and technology. Half also believe that public procurement practice obstructs the introduction of new products and services.

This is particularly true for health ICT companies, seven of ten partly or fully agreeing with these statements. This can be due to Norway not having a system for testing, trialling, approving and purchasing health technology products and solutions. In contrast in pharmaceutics, where such systems exist, only one in three pharmaceutical companies believes these statements to be true.

5. Health industry exports 21.5 billion NOK in 2016

A large proportion of the health industry is dependent on the Norwegian market, primarily healthcare providers units in the health sector. The greatest growth potential lies, however, outside of Norway. The domestic and international markets

are mutually dependent. The more success Norwegian companies achieve within developing and selling products in international markets, the greater the industry's ability will be to serve hospitals and other healthcare service providers in Norway. The more large operators in the health sector (hospitals and municipalities) in Norway contribute to innovation and productivity in Norwegian health tech and life science, the stronger the basis on which the industry can build its international success on will become.

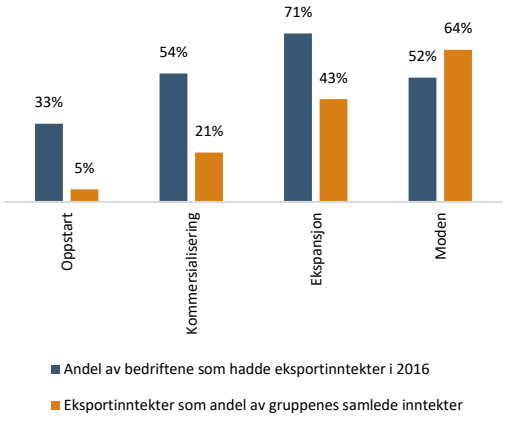


Figure 0-5: Proportion of companies with export income and export income as a proportion of total income. Source: Menon

Health tech and life science is very international. One in three start-up companies in 2016 derived income from outside of Norway. The health industry's income from markets outside of Norway was 21.5 billion NOK, a figure that is clearly higher than total exports for the entire IT industry. The 'trade balance' for health products is also much better than for IT. Health product exports and imports are almost equal. IT imports are, however five times higher that exports.

A large proportion of health tech and life science companies are 'born globals'. They are active in international markets right from start-up. If we split the industry into four phases (start-up, commercialisation, expansion and maturity) then we see that internationalisation is high even in the start-up phase.

6. Great productivity growth potential in the health sector

90 present of health sector employees worked in 2015 with healthcare services. Just six percent of health sector employees worked in health tech and life science. The health sector has grown by 141 percent between 2004 and 2014. 94 percent of growth in jobs in the industry has been among healthcare providers.

The high growth in the number of jobs in the health sector has been driven by increasing demands for health services. This is partly due to an ageing population and partly to continuously increasing healthcare service expectations. A widely held opinion is, however, that growth in the health sector is not sustainable. There will, in the years ahead, be a need for:

- The transfer of welfare services such as healthcare services from hospitals and care institutions to patients.
- Higher productivity among healthcare providers through new drugs, diagnostics, medical technology and medical devices.
- A strengthening of prevention to reduce the incidence and seriousness of diseases.

Health tech and life science is a key to both reducing the need for and increasing the productivity of healthcare providers. The potential gains are also enormous. If, for example, health tech and life science increases productivity in healthcare services by ten percent, then this will release 21 000 employees or increase value creation by 15 billion NOK. This brings about other social benefits such as reduced sickness absence and high quality of life.

7. Social benefits

The total social economic value of the health industry in Norway includes the net value to the whole of society including patients, next of kin, the public health service, the health industry and society as a whole. The net social benefit of the health industry is the total benefit created for all

affected, less the costs to society associated with the health industry and its products and services.

A number of studies have been carried out which attempt to quantify the value of health initiatives in society. One example is a study by Murphy and Topel (2006) of the total social value of the introduction of new methods in the health industry. They show that a long-term reduction in the cancer mortality rate of one percent has a social value of almost 4 000 billion NOK to current and future generations in the USA. They furthermore find that the increase in expected lifetime from 1970-2000 created a value to society that is equivalent to around 26 000 billion NOK per year.

We have in Norway seen, in recent years, the large social benefits associated with the introduction of innovative ICT solutions in the health sector. This has given a documented gain. The project 'Velferdsteknologi i sentrum' (for example) in Oslo in which four boroughs introduced new technological methods in the health sector, reduced the number of admissions by 19 percent and the number of bed days and policlinic consultations by around one third. Initiatives such as this give more healthcare per NOK in the health sector and is therefore a direct benefit to society as a whole. This will be able to bring about greater social benefits over time. A study from 2015 states that an average municipality will be able to release resources equivalent to 55 million NOK a year up to 2040 where satisfactory welfare technology measures are introduced.