

SUMMARY

ECONOMIC IMPACT OF A HYPERSCALE DATA CENTER ESTABLISHMENT IN NORWAY



Summary

This report is a thorough economic impact analysis to identify what effects a potential datacenter could have on the Norwegian economy. The analysis focuses on both local effects and effects for Norway as a whole.

Data centers are facilities that house a large number of high performance computers, known as servers, as well as network equipment and communications. There are several different types of data centers, while in our analysis we have chosen to analyze the effects of a so-called Hyperscale data center. These are large and dedicated data centers established and operated by large, mainly international companies, in line with, for example, Facebook in Luleå and Google in Belgium. Driven by the huge demand for storage capacity and server services, the data center industry is the world's fastest growing power-intensive industry. Norway has very good conditions to take part in this growth.

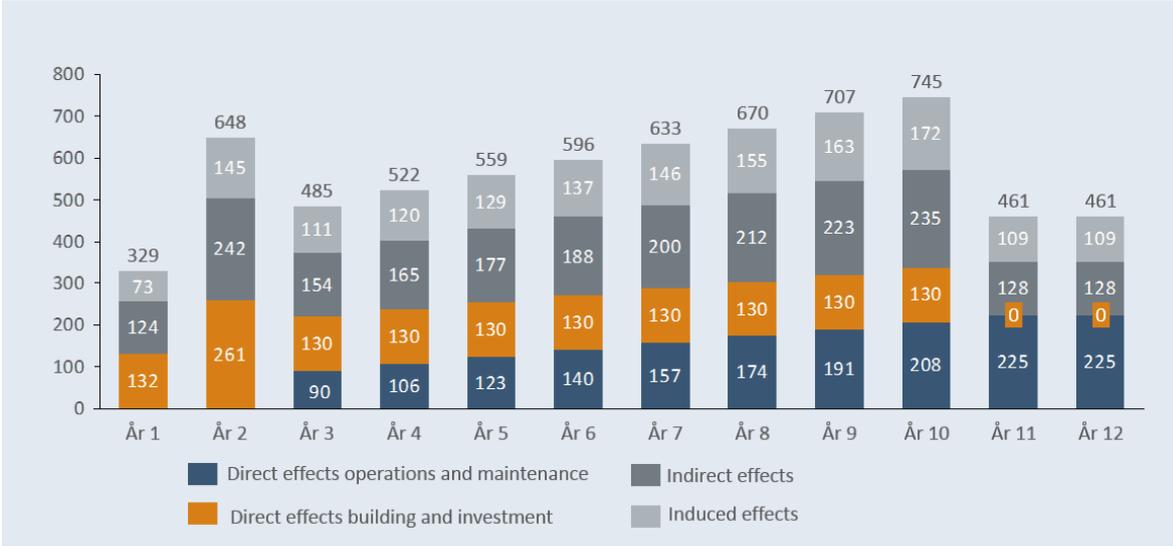
In the public debate it is often claimed that data centers contribute with a relatively small economic impact and that this economic impact only occurs in IT-related industries. This understanding does not take into consideration the investment and construction phase, and, more importantly, effects for the broader supply chain and the catalytic effects resulting from a data center establishment.

We estimate the effects of a potential Hyperscale data center that is expected to be built in three stages over a period of ten years, where operations will start gradually once the individual steps have been completed. Finally, we will end up with a data center consisting of three large data halls with associated administration buildings and other infrastructure. Each computer hall will be approximately 30,000 m² with an installed electrical power of just above 30 MW.

In the analysis, we have estimated the gross national impact of a foreign data center establishment in Norway. It must be pointed out that while we look at gross impacts, it is the foreign investor who will take on the largest costs, and many of the effects are therefore real positive contributions for the Norwegian economy. Using Menon's ITEM model, we estimated the direct, indirect and induced economic and employment impact of a data center establishment.

We have estimated that a data center will contribute to national employment with more than 6800 full-time workers over the 12-year analysis period, and more than 450 full-time workers in the following years when the data center is in full operation. In addition, an economic impact of more than NOK 5.2 billion could be linked to the data center establishment over the period of analysis, with approximately NOK 320 million in annual economic impact thereafter. These effects are not included in the more dynamic effects, which means that the overall effect of the data center is likely to be greater.

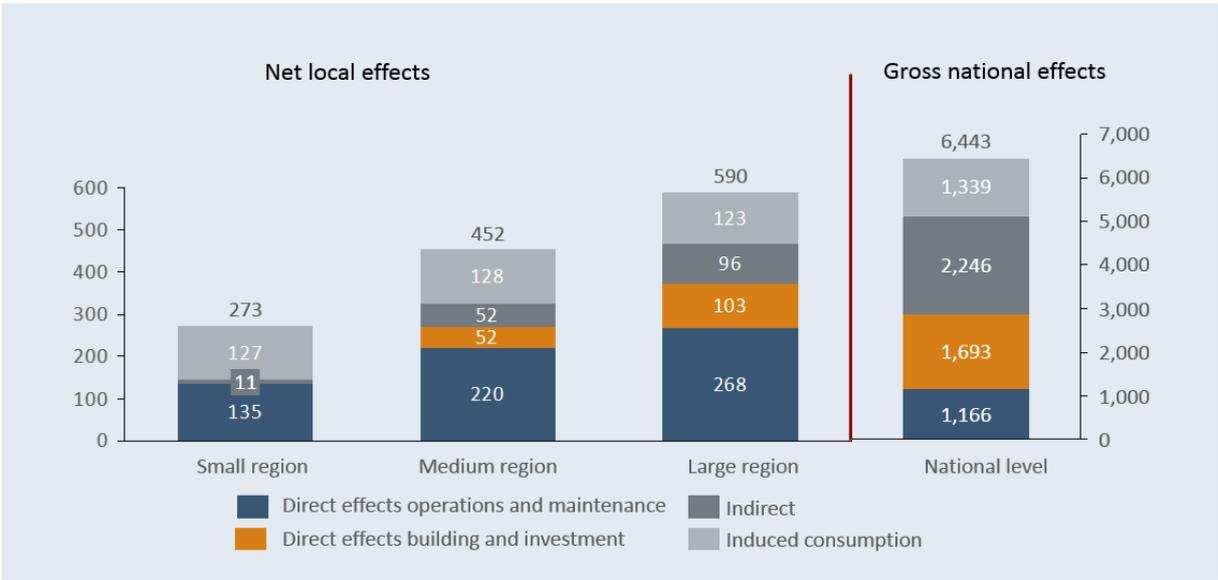
Figure 0-1 Annual employment effects related to both construction and operation of the data center. Number of full time workers on the y-axis



In addition to calculating the national gross economic impact of a data center establishment, we also estimated local net effects. Where the national economic impact does not take into account alternative uses of input resources (such as for example alternative use and value of labor input), the local economic impact could be interpreted as a net positive economic contribution to the region.

We have analyzed the local effects of a data center establishment in average living and labor areas in Norway of three different sizes; small, medium and large. A small housing and labor market region has a population between 1000 and 5000 and is the size of, for example, Sauda. A medium sized region has a population between 10,000 and 25,000 inhabitants while a large region has a population greater than 100,000 and is comparable to, for example, Vestfold (Sandefjord / Larvik / Tønsberg).

Figure 0-2 Local net economic impact and gross national economic impact of a data center establishment in regions of different sizes. Million NOK on the left and right axis.



We estimate the size of local business with relevant competence needed both to build and to operate the data center, and the attractiveness of migration/commuting to the region when analyzing local impact. This to make predictions on what regional effects one is likely to get. The regional effects are likely to be small if there is no firm or workers in the region that can meet the demand of the data center. That leaves the data center importing workers and subcontractors from other regions, hence these other regions will get a part of the economic impact.

For a small region, we estimated employment effects of close to 1600 full-time workers and net economic impact of almost NOK 300 million over a 12-year period. In a medium-sized region, a data center establishment is likely to generate over 2000 local full-time workers and approximately 450 million NOK in economic impact over the same period. The corresponding effects for a large region is approximately 2400 full-time workers and nearly 600 million NOK in economic impact. We see that the local effects are greater the larger the region. At the same time, the relative impact in the region is greater for the smaller regions.

There will be other characteristics of a region except for the size of population that can determine the economic impact. This will in particular depend on the match of competence and skills in the region, both at the worker and firm level. For example, a small region with a high share of workers with the expertise the data center and associated suppliers demand could be likely to experience a greater economic impact than for an average small region.

In addition, catalytic effects are likely to occur as a result of a data center establishment. The catalytic effects are economic effects that arise because businesses, knowledge institutions or organizations - locally or nationally - become more effective or innovative through interaction with the data center. Part of the catalytic effects could be the effects of related businesses establishing in the region or nationally, either for efficiency or knowledge reasons.

Experiences from similar establishments in other countries, a Hyperscale data center may cause potentially large catalytic effects, both locally and nationally. These effects have often arisen as a ketchup effect as more subcontractors and related industries place themselves close to the data center. But also hotels and restaurants, knowledge institutions and others find it attractive to locate themselves near the data center. In addition, the digital infrastructure associated with a data center establishment can help drive national and regional digitization further and again contribute to the creation of other businesses. In other countries, the establishment of a dedicated data center for a large and global brand has also further inspired other data centers and international investors to establish in the country.

We therefore show in our impact analysis that the job creation and economic impact one can expect from the establishment of a Hyperscale data center can be large, both nationally and locally. And that there may potentially be even larger catalytic effects.