Institute of Transport Economics
Norwegian Centre for Transport Research

Summary

Smart mobility and smart business

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The transition process towards smart mobility in Norway will largely depend on the sustainable development of new business sectors that are able to employ people throughout the country. In this context, sustainable means also that the new industries that are expected to grow can compete in the global arena for new and smart transport technologies. Historically, Norway has been able to develop internationally competitive sectors such as the maritime sector or oil and energy related industries. If one reflects on business development on the basis of the idea of comparative advantage, then it is obvious that Norway has had natural advantages which made it possible for the country's economy to take strong positions in these areas. At the same time, it is not as obvious and natural to see similar advantages for Norway in smart mobility. It is then interesting to see what representatives from the Norwegian transport sector themselves think of Norway's opportunities for business development in smart mobility.

Identifying transport related business in Norway

This report has been prepared by the Norwegian Institute of Transport Economics (TØI) on behalf of the The Research Council of Norway (RCN). TØI has during the period from autumn 2018 to spring 2019 worked on the development of this knowledge status among representatives of the Norwegian transport sector. The focus is on the complexity of the transport sector's transformation process and business development opportunities within smart mobility. The assignment is divided into two reports and the present document constitutes part 2. Part 1 of this knowledge status was published in December 2018 (Klimek et.al, 2018). Both reports must be viewed in context and a brief summary of part 1 is therefore given in chapter 1.2 of this report. The NFR will use the analyzes in this assignment for the strategy process Transport21, which aims to design a future research strategy in the transport area in Norway. The main focus of this assignment, including both reports, is to give sector representatives from Norwegian transport a direct voice and the project therefore has information gathered from interviews with 27 experts from Norwegian transport. In this report (part 2), we now mainly analyze two focus group discussions with the main theme of business development opportunities. The analysis also includes sector specific statistics.

Transport related statistics and the SkatteFUNN database

It is difficult to map out business development opportunities within transport on the basis of Statistics Norway's (SSB) standard industry codes. Many of the most interesting innovation activities and new start-up companies are placed under industry codes that are not clearly linked to transport-related activities. One example is the well-known Norwegian company Q-Free, which in SSB's database is placed under industry code SN 62.010 (Programming services). The statistics, on the other hand, are well suited to drawing the national and county situation for 'traditional' transport activities. In the selected data set, 8.9% of all employment in Norway can be related to the transport sector. It is the four most populated counties Oslo, Akershus, Hordaland and Rogaland that employ most people in the transport sector. Freight transport, services and passenger transport are large

for most businesses and again it is the same four counties that have most businesses in these areas.

The Research Council's database for SkatteFUNN provides an insight into R&D activity that can be linked to the transport sector. For the period 2014 - 2018, we see that businesses from Oslo account for most applications. Most projects are reported under the categories freight transport, passenger transport and road transport. It turns out that some of the most active businesses under transport-related SkatteFUNN, which obviously drive innovations within Norwegian smart mobility, are not captured by Statistics Norway's industry statistics. This strengthens the argument that it is difficult to capture tomorrow's business activities in transport with existing statistics.

Findings from focus group discussions

Two separate focus group discussions with representatives from the Norwegian transport sector have been carried out with a focus on identifying business development opportunities within Norwegian transport. Four lines of argument have been identified. We see in these discussions that it is difficult to identify the particular business sectors or companies with potential in the future of Norwegian smart mobility (line of argument 1). But there is a lot of detailed knowledge about individual innovations instead. There is a more systematic understanding among the experts about future opportunities within Norwegian smart mobility and these reflections are based on the idea of comparative advantages. Sectors with potential mentioned are maritime, infrastructure (road construction / tunnels), energy and power and knowledge and technology (line of argument 2). It is nevertheless considered to be complex to identify such advantages. There was clear agreement between some start-up companies during the discussions that it can quickly become a challenge to scale up innovations in smart mobility in Norway (line of argument 3) and this is due to the limited size of the market. Norwegian cities are considered to be too small to test and pilot solutions on a larger scale. The fourth line of argument is about political framework conditions for transition to smart mobility. Repeated references to policy design in the field are identified and the need to constantly adapt the framework conditions. This discussion spans the entire breadth and it calls for a more systematic and targeted policy design for transition to smart mobility in Norway. Findings from the group discussions are summarized in table S1.

Lines of argument	Description
Business structure today	- There is a lot of detailed knowledge about individual innovations and start-ups, but it seems difficult to draw a systematic picture of future business opportunities.
Future expectations / comparative advantages	- We identify a common understanding of sectors that are considered to have potential going forward. This argument is based on the idea of comparative advantage. Sectors mentioned are: maritime, infrastructure (road construction / tunnels), energy and power, knowledge and technology.
From start-up to scale-up	- Challenges have been identified for Norwegian start-ups to grow in the Norwegian market. Cities are getting too small and transport demand too low to be able to scale up an innovation from a start-up company. Challenges have been identified in getting hold of risk capital.
Political framework conditions	- A need has been identified to systematize and map Norway's innovation and business potential in transport and such knowledge must enter into unifying political initiatives.

Recommendations to the Transport21 strategy process

On the basis of input from the group discussions, we provide recommendations to the NFR's strategy process Transport21. These are related to future research initiatives in transport. Note that technology is not included in this analysis.

Recommendation	Description
1.	Future research initiatives should contribute to systematizing and mapping the current knowledge status on the business structure of the transport field. There is also a need to understand how related industries, which do not belong to traditional transport-related businesses, can be identified. Finally, there is a need to understand how related businesses contribute to restructuring the transport system.
2.	Future research efforts should help identify and systematize technologies, companies, environments and niches that can have comparative advantages in the global market for smart mobility. Future research should help to determine whether Norway can take leading positions in the transport sector or whether 'related niches with local character' can be a more realistic business strategy going forward. Such research must also map how Norway can transfer knowledge from strong existing sectors.
3.	Future research initiatives should contribute to developing a strategy for international interaction and knowledge transfer. Such a strategy would contain R&D strategies for domestic and foreign innovation activities. There is also a need to understand interaction and niche strategies through local collaboration with global players.
4.	Future research initiatives should help to understand growth conditions for Norwegian start-ups in the transport sector. There is a need to understand how a small market and small cities affect upscaling of smart mobility companies. There is also a need to understand the economic framework conditions for start-up companies in Norway. Risk capital and conservative role understanding in cooperation between young and established companies must be understood.
5.	Future research efforts should help to understand the political framework conditions for transition to smart mobility. This applies to the full range of policy areas that can affect the transition process.