

Summary

Norwegian business opportunities on the way to an electrified transport sector

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In this report we systemize the knowledge, experiences and ideas related to the business opportunities on the way to an electrified transport sector. Norwegian firms are categorized in how they fit into a model of the electric vehicle ecosystem. Through literature reviews and workshops we identify which parts of the ecosystem that may have the greatest potential business opportunities for Norwegian enterprises.

Background

This report is an output from the research project Electromobility Lab Norway; WP6 Enterprise opportunities lab. The motivation behind this work package is that the switchover to electromobility is expected to give Norwegian enterprises new opportunities. This study is carried out to identify the broad spectrum of opportunities that may arise.

Opportunities arising from the prospect of a relatively drastic switch to electrified passenger car transport can be about removing barriers and bringing down (or compensating for) the total cost of ownership (TCO) of BEVs (Battery Electric Vehicles), so that the obvious benefits over internal combustion engine vehicles (ICEVs) can be realized. BEVs have the benefits of higher energy efficiency and far lower direct user costs than ICEVs, and they provide the possibility of maintaining high mobility while still adapting to a low-emission society. This has both great consumer and social value, but there are barriers and other costs that reduce the net social gain from electromobility. Since the potential social gain from electromobility is so large, there surely exists some willingness to pay for solutions that bring down these costs and barriers. This basis can potentially provide large enterprise opportunities. The potentially low TCO of BEVs can also create enterprise opportunities for new types of services, for example strengthening Mobility-as-a-service (MaaS) value chains.

In this report we will attempt to systemize the knowledge, experiences and ideas related to these enterprise opportunities. The main focus will be on, though not limited to, opportunities for Norwegian enterprises. Some of these opportunities are directly related to electromobility, while other opportunities have serving electric vehicles as one of many services in a larger set of offerings. The study is based on literature reviews and workshops.

A stylized view of the electric vehicle ecosystem

The framework we use for systemizing the knowledge, experiences and ideas related to these enterprise opportunities is based on the stylized electric vehicle “ecosystem” model from Leviäkangas, Kinnunen, and Kess (2014). This model has been modified in Figure 4 to fit the focus of this work package.

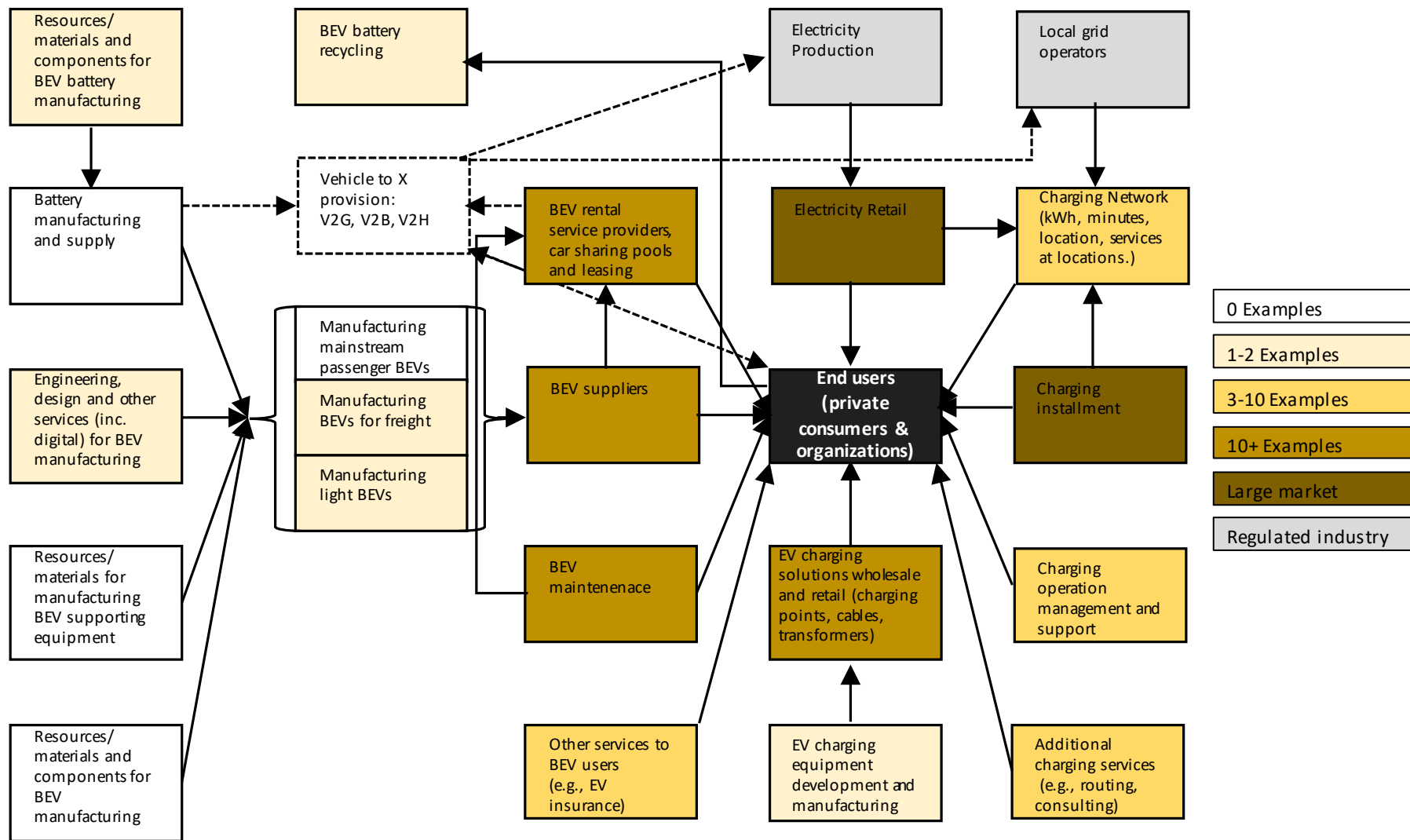


Figure 1: Stylized view of EV ecosystem. Color codes to capture magnitude of Norwegian firms.

With the framework of the stylized electric vehicle ecosystem in place, we search and categorize Norwegian firms and sectors in this framework. We find that most of the firms in this ecosystem are placed close to the end of the value chain, close to the end user. Few are placed upstream with resources, materials and manufacturing.

Moreover, the part of the ecosystem with the highest number of involved firms are traditional sectors like electricity retail, electricians (for BEV equipment installment), car dealerships and car maintenance, and regulated sectors like electricity production and local grid operators. Many of these firms have expanded the scope of their business to include electromobility solutions. With regards to “new” sectors that grow to meet the demands in the EV ecosystem, we see as of now most firms in the category “Charging solutions wholesale and retail”.

Remaining challenges on the way to an electrified transport sector

The workshop participants identified 22 challenges on the way to an electrified transport sector and landed on the following 6 challenges as the most important ones:

- Payment systems
- Knowledge among users and potential users
- Home charging for apartment buildings
- Access to charging during peak times
- Long waiting time for new BEVs, especially for freight
- Push for excessive investment in grid capacity

A list of all the challenges discussed in the workshop is given in section 5.7

Opportunities on the way to an electrified transport sector

The workshops and the literature review seem to point at these 6 opportunities as the most promising ones:

- Development of a top-notch standardized system for payment for charging
- MaaS around the BEV - car sharing, ride-sharing, last-mile solutions and other subscription services
- Advisory services, in Norway and abroad
- Second life for BEV batteries
- Converting conventional freight cars to electric
- Development of fleet-charging systems

A list of all the 21 business opportunities discussed in the workshop is given in section 6.7.

Some firms seem to already be working on seizing some of these opportunities, while some of these opportunities seem to remain untouched. Having more firms stepping up and seizing the enterprise opportunities that emerge as the transport sector becomes more electrified, will be key in order to make the EV ecosystem in Norway thrive.