



Infrastrukturdepartementet

The national strategy for electrification and the electrification commission– discussion paper for dialogue with Swedish Academia

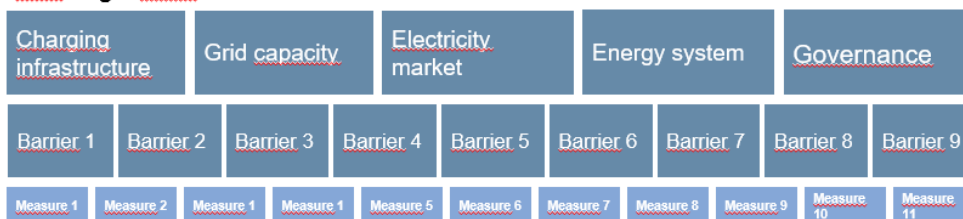
There are two parallel government-led processes on electrification. A working group within the Ministry of Infrastructure will by the end of October 2021 develop the government’s sector wide (transport, industry, etc) national electrification strategy focussing on energy policy. A high level and minister-led electrification commission will work until the end of 2022 to speed up the electrification in the transport sector. More information can be found in the annex.

Objective/vision

A quick, system smart and socio-economical electrification to fulfil Sweden’s climate objectives 2030, 2040 and 2045.

The path towards a highly electrified energy system in the future

How to get there



1. Overarching objective/vision

The electrification strategy should contribute to a quick, system smart and socio-economical electrification to fulfil Sweden’s climate objectives 2030, 2040 and 2045. The electrification can (as in the past) be an opportunity for many other societal objectives and for the future competitiveness of the

Swedish economy in a global context. If it's broadly agreed that the future will be highly electrified, there may be different views about the magnitude of the transition and how Sweden's electricity system may develop nationally and regionally.

The Commission for Electrification should speed up the electrification of the transport sector as a whole.

2. Charging infrastructure

The deployment of charging infrastructure should not be a barrier for the electrification of transport. How can we ensure this in practice, so industry and drivers can be confident about the coverage of infrastructure while keeping a market driven development? Another issue is smart charging of electric vehicles from an electricity systems perspective. How can smart charging help when grid capacity is scarce and how can we unleash the potential more concretely?

Related assignment of the Commission of Electrification:
Identify measures that various stakeholders can take to increase the pace of electrification of transport.

3. Grid capacity

The electricity grids need to be developed and used effectively as the electrification of the society increases. A challenge is that lead times for grid investments are too long and doesn't match the industry's expectations. Grid planning towards a "moving target" with a somewhat uncertain future is challenging and "over investments" can be expensive. Existing grids can be used more effectively, making use of various flexibility options. The question is what more is needed, if anything, to enable this.

Related assignment of the Commission of Electrification: -
Identify measures that various stakeholders can take to increase the pace of electrification of transport.
- Highlight how electricity grid investments rapidly can be made to electric roads as well as to other kinds of charging infrastructure, and estimated costs for this at different levels of ambition.

3. Electricity market for electrification

The electrification will result in a substantial increase in the electricity demand. We still need a robust electricity supply with competitive electricity prices and low emissions. The question is how our electricity market design can deliver a secure and cost-effective supply of electricity, capacity and system services in time and in the “right” place to enable the electrification we are expecting.

Related assignment of the Commission of Electrification: To highlight the effects on the electricity supply of the electrification of transport.

4. Energy system for electrification – system smart sector coupling and energy efficiency

The next wave of electrification will lead to new challenges and opportunities for the energy system as a whole. How can energy efficiency, waste heat and district heating help? What is the outlook for Power-to-X, including hydrogen, that may have a huge impact on the electricity demand but may at the same time provide energy storage for balancing the power system? How may electricity, gas and transport infrastructures be interlinked for a system smart solutions? What decisions are needed by politicians what should be left to the market?

Related assignment of the Commission of Electrification: The assignment also includes analysing and considering how digitization and various innovative solutions further can accelerate the electrification. Highlight how hydrogen can contribute to the electrification of the transport sector.

5. Governance

It is likely that more and better co-operation and coordination is needed between government and industry and between the national and regional level. A developed governance system could help a more “synchronised” development that is better accepted in society. Some stakeholders have argued for some kind of “planning framework” that could in a credible way point out the direction and help to create the right pre-conditions. Others want to clarify who is responsible for a well-functioning electricity system as a whole. The development of the electricity system is dependent on the acceptance among the general public and needs to go hand in hand with other societal objectives, including environmental and defence ones.

Related assignment of the Commission of Electrification:

Identify measures that various stakeholders can take to increase the pace of electrification of transport.

- Highlight how electricity grid investments rapidly can be made to electric roads as well as to other kinds of charging infrastructure.

- Highlight issues of environmental effects in a broad sense regarding electrification in all modes of transport.

- Highlight how hydrogen can contribute to the electrification of the transport sector.

- Consequences of the electrification for Sweden's defense, the emergency preparedness of society and for the robustness and vulnerability of the infrastructure and the transport system.

Annex - background to the work on the electrification strategy and the electrification commission

The full description of the task of the electrification strategy can be found here (Swedish):

<https://www.regeringen.se/4a98aa/contentassets/de40b9d1b5ce4f66b9c27b25b89d7c10/regeringskanslibeslut-arbetsgrupp-med-uppgift-att-ta-fram-ett-forslag-till-en-nationell-strategi-for-elektrifiering-med-bilaga.pdf>

The government has set up a Commission for Electrification to speed up the electrification of the transport sector. The Commission for Electrification is an advisory body. The Commission for Electrification consists of 16 members from business, the public sector and the research community and is chaired by the Minister of Infrastructure. The work of the Commission for Electrification and with the electrification strategy, respectively, complement each other when it comes to electrification of the transport sector. Analysis and proposals regarding the transport sector from the Commission for Electrification will be considered in the development of the strategy. The Commission for Electrification has the mandate to work with the electrification of both passenger and freight transport within all modes of transport. Electrification here refers to electrification with all relevant technologies, including hydrogen technology. You find the complete assignment here (Swedish):

<https://www.regeringen.se/4a944c/contentassets/8a54d1f3a61b4f078460f775f9b4ffe6/elektrifieringskommissionens-uppdrag.pdf>