

Research & Innovation for Electric Roads

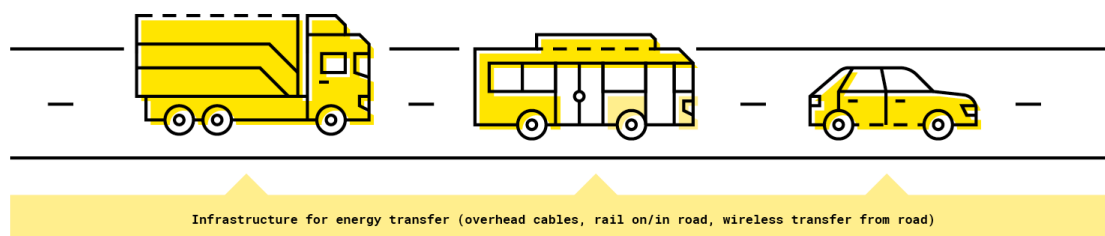
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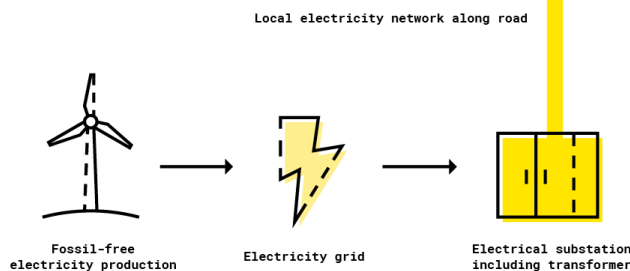
Achieving a fossil fuel-independent vehicle fleet and reducing greenhouse gas emissions will require a radical transformation of the transport industry. Electrifying the vehicle fleet forms an important part of this transformation.

One part of a complete, society-wide solution could be electric roads that supply vehicles with electricity, to both power them and charge them as they drive. With electric roads, cars can have smaller batteries than at present, but still drive long distances. Electric buses in cities would not need to stop to charge at bus stops. Of equal significance, electric roads facilitate the electrification of heavy long-distance road freight, for which battery capacity would otherwise be a challenge.



Electric roads – how they work

Electric roads transfer energy directly to electric vehicles while the vehicles are moving. The energy can be used to power vehicles' movement or to charge their batteries. The abbreviation ERS (Electric Road System) is commonplace.



Benefits of electric roads include reduced dependence on fossil fuels, reduced greenhouse gas emissions, reduced air pollution, reduced noise in urban areas, increased energy efficiency in the transport sector, and reduced need for large batteries in passenger cars.

How do we take the step from testing electric road technology to large-scale deployment? What does the business ecosystem look like and how can interfaces be standardized? What are the benefits to society?

Actors from research organizations, industry, and public authorities have collaborated in the joint project “Research & Innovation Platform for Electric Road Systems” to investigate the above questions and much more. This article briefly presents the project’s results among the areas electricity supply; environmental impact; construction, operations and maintenance; economic impact; business models; and standards.

The goal of the project has been to strengthen research and innovation with regards to Electric Road Systems (ERS). Together, researchers, businesses, and public sector actors in Sweden and Norway have developed a joint knowledge base. Thanks to this collaboration, we have provided clarity about the socio-economic factors, environmental benefits, and other effects related to electrical roads. The project has explored the benefits from the perspectives of different actors. We have examined implementation strategies, operation and maintenance standards, proposed regulatory systems, the factors affecting the acceptance of electric roads, and the development of international collaboration.

The project began in 2016 and knowledge building continued until 2019. In parallel, project researchers collaborated with German research organizations in a joint study called COLLERS (Swedish German Research Collaboration on ERS). Knowledge and findings have been continually shared during the project through information meetings, seminars, and annual international conferences. During 2020 and 2021, the project’s focus was primarily to disseminate results.

A report with the collected results is available to read in full at the www-site electricroads.org where also additional research findings and material about electric roads can be found.