Life cycle assessment of banning cars with internal combustion engines in Sweden till 2045

According to international Energy Association, the transport sector accounts for 22% of global GHG emission among the economic sectors, while road transport has 74% contribution of transport GHG emissions. The other critical issue regarding to road transport is air pollution such as SOx, NOx, carbon monoxide, ozone, heavy metals and etc. Air pollution can intensify the risk of long-standing impacts on human health and disrupt several systems and organs.

Banning sales of petrol/diesel-powered cars could help to ensure energy security, improve air quality and mitigate global warming. A ban on internal combustion engines results significantly in reduction of GHG emission and air pollution. With this aim, the Swedish government has proposed an outright ban on the sale of new fossil fuel cars from the year 2030, and usage of these kinds of cars will be reduced continuously to reach zero at 2045. Hence, this project investigates on the effects of banning of passenger cars with internal combustion engines in Sweden and analyze the life cycle assessment by considering several scenarios.

Firstly in this project, the required transportation statistic should be collected and then need to make several rational scenarios regarding to reduction rate of conventional passenger cars in time horizon of study. At the next step, by applying openLCA software or other methods, the most important environmental indicators like global warming potential (GWP), human toxicity, acidification and etc could be calculated and finally the results should be analyzed and discussed. In fact, the purpose of calculating environmental indicators is to understand that by banning conventional cars how much CO2 emission and air pollution are reduced as well as the results of this project will be so helpful for governmental decision maker and researcher in this field of sustainable transport.

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