

The right carbon tax to reduce the impact of transport in Switzerland

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Using macroeconomic modeling, EPFL researchers have identified the most effective carbon tax for Switzerland to meet the Paris Agreement targets: a uniform levy on gasoline, diesel fuel and heating oil, rising steadily to 1.70 francs per liter by 2050.

The Swiss transport sector has become the country's leading CO₂ emitter, accounting for 41 percent of total emissions. That proportion is

higher than the figures for the European Union (28 percent) and the United States (34 percent). Most of these emissions (98 percent) come from road traffic, with individual vehicle owners responsible for two thirds of them. The large proportion of emissions generated by transport in Switzerland also results from the country's large number of 4x4 vehicles, which represent around 40 percent of new vehicle registrations as opposed to an average of 13 percent in the EU. Strategies for reducing vehicle emissions are a key subject for discussion in both political and economic terms, and road traffic is expected to rise steadily unless tough political decisions are made.

At EPFL, researchers specializing in [environmental economics](#) looked into this matter at the request of the Swiss Energy Modelling Platform. Using macroeconomic simulation tools, they compared several carbon-tax scenarios between now and 2050. They found that a uniform tax on heating oil, gasoline and [diesel fuel](#) would be a cost-effective way to reduce CO₂ emissions from 4.5 tons per inhabitant today to 1.5 tons. The proportion of [total emissions](#) generated by transport would fall from 41 percent to 33 percent.

A uniform tax

In practical terms, the CO₂ levy, which is currently 25 cents per liter of heating oil, would be applied to gasoline and diesel [fuel](#) as well and steadily increased to 1.70 francs by 2050. "By treating fuels equally, you would avoid penalizing one sector relative to another. So if the levy on gasoline and diesel fuel were limited to 1 franc per liter, the tax on heating oil would have to rise to 4 francs. We also took into account the steady decrease in the amount of fuel consumed by car engines, which means that, in the end, the levy has very little impact on drivers' budgets," says Philippe Thalmann, head of EPFL's Laboratory of Environmental and Urban Economics and co-author of the study that has just been published in the Swiss Journal of Economics and Statistics.

The researchers also factored other technological developments into their projections, such as the rise of biofuels and [electric cars](#).

Carmakers are under real pressure to change. For example, Volvo has announced that half of all the vehicles it produces will be equipped with an electric engine by 2025. Growth in alternative travel methods, such as public transport, car-sharing and human-powered modes of travel, were also taken into account.

However, Philippe Thalmann stresses that "for such a tax to work, it must encourage people to use a clean alternative in order to avoid the levy. The resulting tax revenue could facilitate this, such as by subsidizing a network of electric charging points, electric car purchases and the public transport system."

More information: Philippe Thalmann et al. Lowering CO2 emissions in the Swiss transport sector, *Swiss Journal of Economics and Statistics* (2019). [DOI: 10.1186/s41937-019-0037-3](https://doi.org/10.1186/s41937-019-0037-3)

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