

Science for Environment Policy

Selection of policy options to encourage take-up of low-carbon transport assessed

A 'feebate' can be an effective policy option to aid the transition to a more environmentally-friendly transport system, a UK study suggests. This combination of fees and rebates can increase the take-up of low-carbon cars, the researchers argue, which leads to reduced life cycle greenhouse gas (GHG) emissions.

Reducing transport's damaging environmental impacts is a significant challenge. However, influencing consumers' car use and choice of technology through pricing and taxation may bring substantial improvements. This study focused on cars in the UK and examined three types of policy instruments: feebates (fees and rebates to encourage the purchase of fuel-efficient vehicles), vehicle road tax (annual tax for the use of public roads) and vehicle scrappage schemes (financial incentives to scrap older, less efficient cars).

Using a model based on car ownership, car and market demand, the researchers simulated the performance of different policy scenarios up to 2050, including the use of feebates, road tax and scrappage schemes, and compared these to a 'business-as-usual' scenario. Business-as-usual assumed gradual improvements CO₂ exhaust emissions. Rates of improvement varied with vehicle type, size, propulsion technology and for future years were based on technological innovation driven by market competition, not by policy. The performance of each policy was assessed on the basis of four factors: how they affected low-carbon technology uptake, GHG emissions, car use and the amount of revenue collected (or rebates given).

The results suggest that, amongst the policy options tested, feebate policies would be especially effective at reducing the four factors studied. Under these policies, there is an additional fee to purchase cars that emit high amounts of CO₂, but a financial reward to purchase low-emission vehicles. Under the most ambitious of these schemes, which included increasingly strict feebates, it was predicted that 6% fewer cars would be bought, compared to business-as-usual, by setting fees of up to £8000 (€9464) and rebates of up to £4000 (€4732) per new car.

Under this scenario, the percentage of newly purchased plugged-in cars (battery electric and plug-in hybrid cars) would increase to 69% by 2050, the results suggest. They also predict that, by 2040, the car fleet would emit less than 80g of CO₂ per kilometre on average, compared to the approximate present-day average of 149g per kilometre. This is in contrast to business-as-usual, where the CO₂ emissions of the car fleet are not predicted to reach below 80g per kilometre, and it is therefore unlikely that the reductions needed for long-term climate goals would be achieved.

Both direct exhaust emissions of CO₂ and total life cycle emissions were reduced most quickly by the ambitious feebate policy, with direct car CO₂ emissions 49% lower than the business-as-usual scenario by 2050, and life cycle GHG emissions 20% lower. Road tax policies led to reduced life cycle GHG emissions of up to 10% by 2050.

The effects on car use would be minimal for all policies considered, and scrappage schemes were expected to actually increase car use by up to 3% by 2050, due to lowered car ownership costs. In the analysis, scrappage schemes also performed less favourably in terms of life cycle GHG emissions, with the long-term rebate scheme leading to increased emissions, compared to business-as-usual.

The model uses assumptions regarding CO₂ and fuel consumption improvements dependent on many factors, such as fuel type, propulsion technology and car vintage, which may vary in the future. However, the researchers stress that the key ranking is unlikely to be substantially altered, providing a useful comparison between policy scenarios.

25 July 2013

Issue 338

Subscribe to free weekly News Alert

Source: Brand, C. Anable, J. & Tran, M. (2013). Accelerating the transformation to a low carbon passenger transport system: The role of car purchase taxes, feebates, road taxes and scrappage incentives in the UK. *Transportation Research Part A*. 49:132-148. DOI:10.1016/j.tra.2013.01.010.

Contact:
christian.brand@ouce.ox.ac.uk

Read more about: [Climate change and energy](#), [Environmental economics](#), [Sustainable mobility](#)

The contents and views included in Science for Environment Policy are based on independent, peer-reviewed research and do not necessarily reflect the position of the European Commission.

To cite this article/service: "Science for Environment Policy": European Commission DG Environment News Alert Service, edited by SCU, The University of the West of England, Bristol.

