Climate tax on meat and milk results in less greenhouse gases

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A climate tax corresponding to $80/ton CO_2eq on meat and milk could reduce greenhouse gas emissions from European agriculture by around seven per cent. If the land made available is used for bioenergy production, the decrease in emissions can be six times greater. This is shown by the researchers Kristina Mohlin, Stefan Wirsenius and Fredrik Hedenus, University of Gothenburg, Sweden, in an article published in the scientific journal *Climatic Change*.

Kristina Mohlin is a PhD student at the Department of Economics at the University of Gothenburg. She wrote the article together with her research colleagues at Chalmers University of Technology in connection with her degree project at the Department of Energy and Environment.

In the article, the researchers show that reduced meat, milk and egg consumption has two effects: a direct one which means significantly lower emissions of methane and nitrous oxide and an indirect one through land being made available which can be used for bioenergy cultivation.

Food production is a source that cannot be disregarded when considering greenhouse gas emissions – globally it accounts for 20-25 per cent of emissions. However, emissions from food are difficult to tax as the principal emission sources are methane from the stomachs of cows and nitrous oxide from land to which fertiliser has been applied – both these emission sources are technically complicated and very costly to measure. There is also a lack of effective technical solutions to reduce these

emissions. On the other hand, changed food habits can have a great impact. If beef is replaced by chicken, emissions decrease by 90 per cent, and if beef is replaced by beans the reduction is 99 per cent.

"A tax on the emissions from food production would normally be preferable. But as this is virtually impossible in practice, and the effects of switching away from meat and milk are so great, we show that it can be far more effective to apply the tax directly to the meat and milk consumption," says Stefan Wirsenius, a researcher in the Department of Energy and Environment at Chalmers.

Beef, which is responsible for the highest emissions per kg of meat, would be taxed higher under the proposal, while chicken and pork would be taxed lower as their emissions are lower.

"Today we have taxes on petrol and a trading scheme for industrial plants and power generation, but no policy instruments at all for food-related greenhouse gas emissions.

This means that we do not pay for the climate costs of our food," says Fredrik Hedenus, another researcher in the Department of Energy and Environment at Chalmers.

A climate tax on meat and milk would probably also mean that land becomes available for the growing of bioenergy crops.

"If the world decides on substantial reductions in global greenhouse gas emissions, land will become a scarce resource, as a lot of land may be needed for bioenergy. Land-efficient food production and consumption will therefore become increasingly important. And beef production requires twenty times more land per kcal than beans," says Hedenus.

A tax equivalent to $80/ton CO2 (far less than half the current petrol

taxes in many European countries) would according to the calculations reduce beef consumption by about 15 per cent.

"This tax is not at all a matter of forcing people to become vegetarians but merely moving towards a slightly more climate-smart diet," says Wirsenius.

More information: *Climatic Change* Title: Greenhouse gas taxes on animal food products: Rationale, tax scheme and climate mitigation effects. Authors: Stefan Wirsenius, Fredrik Hedenus, Kristina Mohlin

Provided by University of Gothenburg