Meeting climate targets may require reducing meat and dairy consumption

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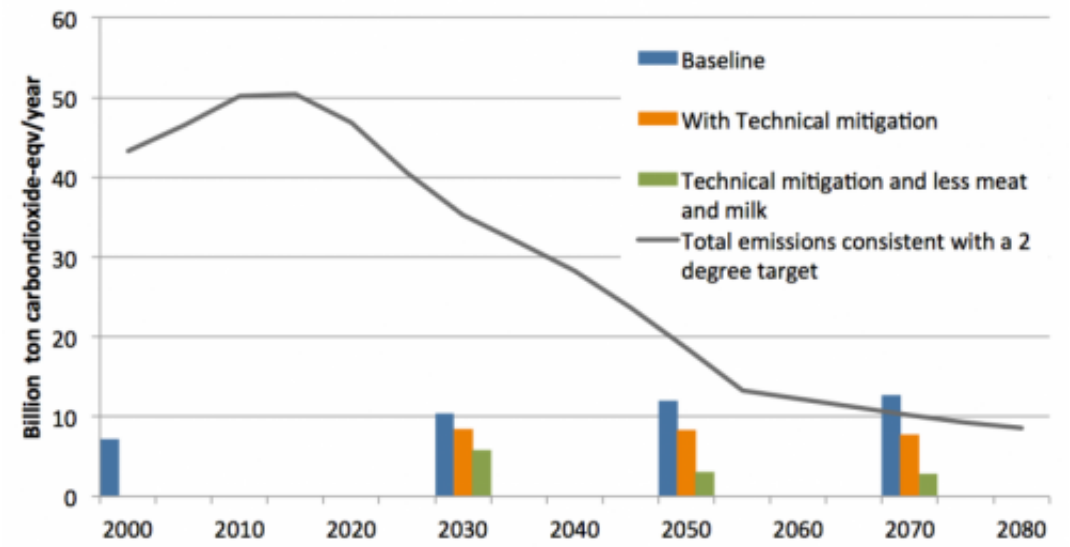

The line shows how much total emissions must be reduced to meet the two degree target with large certainty. The bars show future agricultural emissions at current trends (blue), if agricultural productivity increases and technical measures are implemented (orange), and if technical measures are combined with a 75 percent reduction in meat and dairy consumption (green). The distance between the bars and the line shows the total possible magnitude of emissions from energy, transport, industry and deforestation. Credit: Fredrik Hedenus

Greenhouse gas emissions from food production may threaten the UN climate target of limiting global warming to 2 degrees Celsius, according to research at Chalmers University of Technology, Sweden.

On Monday 31 March the Intergovernmental Panel on Climate Change (IPCC) presents their report on the impacts of climate change.

Carbon dioxide emissions from the energy and transportation sectors currently account for the largest share of climate pollution. However, a study from Chalmers now shows that eliminating these emissions would not guarantee staying below the UN limit. Emissions from agriculture threaten to keep increasing as global meat and dairy consumption increases. If agricultural emissions are not addressed, nitrous oxide from fields and methane from livestock may double by 2070. This alone would make meeting the climate target essentially impossible.

"We have shown that reducing meat and dairy consumption is key to bringing agricultural climate pollution down to safe levels," says Fredrik Hedenus, one of the study authors. "Broad dietary change can take a long time. We should already be thinking about how we can make our food more climate friendly."

By 2070, there will be many more of us on this planet. Diets high in meat, milk, cheese, and other food associated with high emissions are expected to become more common. Because agricultural emissions are difficult and expensive to reduce via changes in production methods or technology, these growing numbers of people, eating more meat and dairy, entail increasing amounts of climate pollution from the food sector.

"These emissions can be reduced with efficiency gains in meat and dairy production, as well as with the aid of new technology," says co-author Stefan Wirsenius. "But the potential reductions from these measures are fairly limited and will probably not suffice to keep us within the climate limit, if meat and dairy consumption continue to grow."

Beef and lamb account for the largest agricultural emissions, relative to

the energy they provide. By 2050, estimates indicate that beef and lamb will account for half of all agricultural greenhouse gas emissions, while only contributing 3 percent of human calorie intake. Cheese and other dairy products will account for about one quarter of total agricultural climate pollution.

More information: "The importance of reduced meat and dairy consumption for meeting stringent climate change targets," by Fredrik Hedenus, Stefan Wirsenius, and Daniel Johansson, *Climatic Change*, March 31, 2014.

Provided by Chalmers University of Technology