

## Teagasc Notes for week ended Friday July 19<sup>th</sup> 2019

### **Achieving GHG emission reductions will require smart policy as well as smart agriculture**

In this week's Teagasc notes, we are publishing an article written by Trevor Donnellan, Teagasc Economist in recent weeks. The article has an interesting perspective on policy formation to achieve GHG emission reductions.

Following an intense period of number crunching that has tested the analytical capabilities of sectoral experts and policy makers - Ireland now has a Climate Action Plan.

As part of this plan, Irish agriculture now has a greenhouse gas (GHG) reduction target requiring that the sector reduce emissions by 2030 to a range of 17.5 to 19 million tonnes of carbon dioxide equivalent. The agricultural sector has been growing in size in recent years, as has its total GHG emissions. Irish agricultural GHG emissions in 2017 (the most recent year for which we have official figures) were equivalent to 20.1 million tonnes. The challenge facing agriculture is to reduce those emissions in the coming years in a way that doesn't compromise the sector's growth potential.

Addressing the GHG emissions reduction target will principally require a reduction in emissions from bovine agriculture, since this is the source of the vast bulk of Ireland's agricultural GHG emissions.

While there is evidence to show that the amount of GHG emissions generated in producing a unit of a product (emissions efficiency) is improving, Irish agricultural emissions are still on an upward path as the increase in the volume of production is overriding the efficiency gains.

There has been a somewhat hysterical reaction to the increase in agricultural GHG emissions in some quarters. However, an increase in Irish agricultural emissions in the short term was inevitable once it became clear that the milk quota system was being abolished. The economics of the Irish dairy sector mean that it has strong growth potential because of its international competitiveness. While dairy sector profitability in recent years has been volatile, the trend in profitability is most definitely upwards. As a result Irish milk production has continued to increase, but so has its total GHG emissions.

But milk production only requires dairy cows and a stream of replacements. Surplus animals from the dairy herd, along with the progeny of the suckler herd, provide the bulk of Ireland's beef production. In contrast to the dairy sector, profitability in Irish beef production continues to be very low.

Reducing GHG emissions will require the application of a host of emission reduction strategies that have been identified by Teagasc. But what if that is not enough? What if activity in the sector grows at a rate that produces a small reduction or no reduction in GHG emissions, even if all of these mitigation actions are deployed by Irish farmers? How then might the sector deliver on its reduction commitments?

For some the solution is simple and it's the same solution that has been advocated for over a decade - get rid of the sucker cow, or more specifically engineer a significant exodus of farmers from beef production. Given that profitability in beef production is minimal, support payments would continue to provide a similar level of farm income if producers exited production.

However, those that advocate such a strategy need to be mindful of the law of unintended consequences. Beef production is a low margin business. But it is also by and large a low intensity production system. Teagasc National Farm Survey data has shown that on a hectare basis the

average beef farm produces less than half the GHG emissions of the average hectare on a dairy farm. The difference in GHG emissions per hectare can largely be put down to a difference in the intensity of production between the dairy and beef systems. Put simply, dairy farming operates at a higher stocking rate and is a more intense user of nitrogen fertiliser than beef farming.

So what could happen if significant numbers of beef farmers were to exit beef production? The rights and wrongs of the low incomes in beef farming is a discussion for another day. From a simplistic climate policy perspective it would be advantageous if some beef farmers chose to plant their land with trees. Some might well do that. In that case such beef farms would switch from being a source of GHG emissions to being a sink for carbon.

Others have advocated a mass change in land use in favour of horticulture, but this suggestion fails to take account of the wafer thin margins in horticulture and the volume of product that would need to be harvested and exported, not to mention the task of finding the people to work in a very labour intensive activity in an economy already at full employment. In addition conversion of permanent grassland to horticulture or tillage would result in large losses of carbon dioxide equivalent to or larger than the emissions from the displaced beef cattle.

More realistically exiting beef farmer might look to the land market. Some might even be persuaded to sell, but most likely beef farmers would take a serious look at the leasing potential.

And here is the rub. The current phase of dairy expansion (based mainly on owned land) will eventually run out of road. Should milk prices remain healthy, and there is no reason to assume otherwise, many dairy farmers will therefore be looking for additional land.

Yet when a beef farmer leases or sells land to a dairy farmer what is likely to happen? A doubling of the stocking rate and a tripling of nitrogen use are on the cards for a hectare of land moving from beef to dairy. That's all bad news for anyone tasked with delivering a reduction in Ireland's agricultural GHG emissions.

Strange as it may seem, a policy designed to persuade farmers to exit beef production entirely could be less successful in reducing GHG emissions than a policy that encourages beef farmers to stay in beef farming and merely operate at a lower production intensity - an extensification strategy in layman's terms.

Agriculture faces many other challenges around environmental sustainability such as improving water quality, reducing ammonia emissions and protecting and enhancing biodiversity. To achieve all of these environmental goals there is a need for integrated policies that look at the synergies and trade-offs between different actions to improve environmental sustainability.

So when proposing policy - beware of the law of unintended consequences.