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WWF briefing on comparing the environmental impact of farming across countries for trade policy

This brief provides further insights on data used in the Board of Trade *Green Trade* report on the environmental impact of agricultural production in countries with which the UK is negotiating trade deals. WWF is a core member of Greener UK and this briefing is intended to supplement Greener UK briefings on trade <https://greeneruk.org/briefings/trade>.

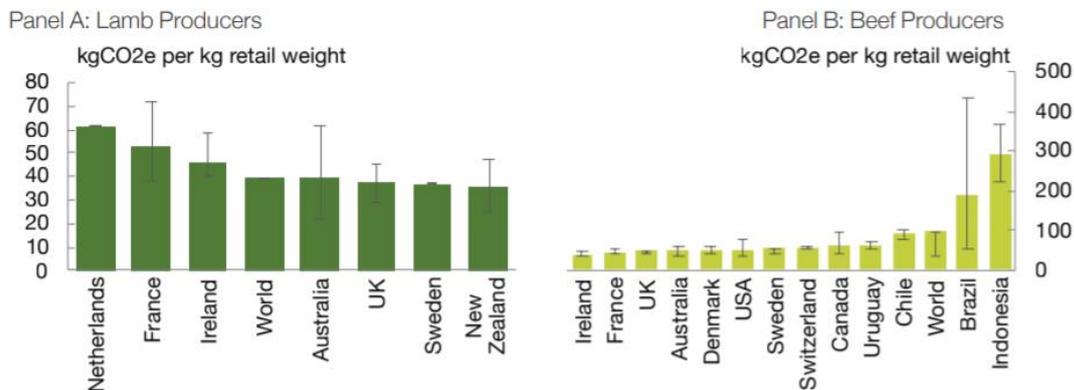
BACKGROUND

The Board of Trade works alongside but is separate to the Department of International Trade. Its president is the Secretary of State, Rt Hon Liz Truss MP, its members comprise ministers and a number of independent advisors. Although the Board of Trade's views are distinct from DIT policy, they are nonetheless important and influential so it is good to see their July 2021 *Green Trade* report looking at climate change and nature restoration together, as well as opportunities and risks to the economy addressing them will present.

Moving to more sustainable food and farming system is fundamental to achieving our global environmental goals on net zero and nature restoration so it is critical we understand the impact of different types of farming – including the differences in greenhouse gas (GHG) intensity of livestock production across countries – and set the right incentives for trade in food accordingly. It is particularly important data on ghg intensity is used in context because, by itself, it could give the misleading impression that, say, UK and Australian livestock farming are broadly comparable. This briefing shows why that is not the case.

Board of Trade Green Trade (July 2021)

Figure 4: Lifecycle assessment of the GHG intensity of lamb and beef producers



Source: Climate Change Committee (2020) 'Land Use: Policies for a Net Zero UK' drawing on Poore, J. & Nemecek, T. (2018) 'Reducing food's environmental impacts through producers and consumers', Science, 360 (6392), 987-992

Notes: Bars show the mean life cycle emissions from producing 1kg of retail lamb and beef. Production methods are weighted by their share of national production – ranges show variation in estimates between studies. Beef production refers to emissions from dedicated beef herds only, not emissions from beef produced by dairy herd, which are often lower. Some of the studies included do not fully account for land use change so may underestimate emissions intensities for countries that have experienced deforestation in the past 5-10 years. Transportation (via shipping) of New Zealand lamb to the UK is included in one of the studies for New Zealand lamb in Panel A and is only a small contributor (~5%) to emissions.

Green Trade includes charts on lifecycle GHG intensity of lamb and beef from Poore and Nemecek. This is the most comprehensive, consolidated data set on GHG intensity and WWF is supporting the development of the HESTIA platform based on Poore and Nemecek’s work as part of the **Food Sustainability Analytics** programme at University of Oxford, Oxford Martin School.

However, the data on GHG intensity needs to be properly understood. If we take the UK and Australia – the subject of particular interest because of the current UK-Australia trade deal negotiations – the charts give the impression that the production systems of the two countries are broadly comparable in terms of GHG emissions, which could be interpreted to mean they are broadly comparable on environmental impact. This is not the case and using GHG intensity only to compare farming systems is an insufficient and incomplete representation of environmental impact that need to be considered in policy.

The following brief sets out the three big problems with using country level GHG intensity data to make comparisons of farm systems to inform to UK trade negotiations with Australia, New Zealand, Canada and the US and other big agricultural exporters.

THREE PROBLEMS WITH A GHG INTENSITY ONLY APPROACH

1. Climate is not the only environmental factor to consider when comparing the environmental impact of farming.

HESTIA and all robust analysis of environmental impacts of food production look at effects on climate alongside effects on water, biodiversity, and resource use wherever possible.

An extract of the data from WWF’s **Bending the Curve: The Restorative Power of Planet-Based Diets** shows that, Australia’s beef and lamb production has very much higher impacts on biodiversity and scarce water resources than UK production. And, although they have similar eutrophication potential from lamb (i.e. algae bloom and dead zones caused by excess nutrients from manure), the eutrophication potential of beef is likely to be much higher in Australia than the UK.

It is important to note the low biodiversity impact figures in the UK in large part reflect the extent of UK nature depletion, meaning there is little for the UK left to lose. The challenge in the UK is to restore nature in already farmed landscapes by transitioning to sustainable agriculture, whereas Australia has to transition to sustainable agriculture to also stop deforestation and conversion driven by expansion of overall area being farmed.

Environmental impacts of UK and Australia beef and lamb production (extract of analysis from The Restorative Power of Planet-Based Diets)				
Carcass Weight (kg)	Beef		Lamb	
	UK average	Australia average	UK average	Australia average
Land Use (m ² per year)	55	730	195	2,125
Biodiversity Impact (species potentially lost per year times 1 x 10 ¹⁴)	40	2,850	120	8,310
Greenhouse Gas Emissions (kg CO ₂ eq)	27	35	28	30
Eutrophication Potential (g PO ₄ ³⁻ eq)	90	310*	85	75
Water Use (L)	740	680	540*	1150*
Scarcity Weighted Water Use (L eq)	3,390	50,410	2,480*	84,460*

* Higher uncertainty in these numbers.

Source: WWF (2020) *Bending the Curve: The Restorative Power of Planet-Based Diet* – underlying data kindly provided by Joseph Poore.

The EU's **Sustainability Impact Assessment** from March 2020 supporting the ongoing negotiations of an EU-Aus deal is also instructive on the wider environmental impact of trade with Australia since the UK and EU currently have very similar farming and environmental regulations. The EU SIA models the impacts of a full trade liberalisation scenario and sets out the following on biodiversity and water impacts:

*“Land clearing and grazing: The clearing of native vegetation, especially in the states of Queensland (The Economist, 2018) and New South Wales (Hannam, 2019), mostly for agricultural use (for cropping and livestock), negatively **affects biodiversity by removing native vegetation** which is also habitat for native fauna. Additionally, the agricultural practices that replace the vegetation create additional environmental impacts that further affect biodiversity. For example, hooved animals remove vegetation cover **reducing soil integrity, which increases soil loss from land and increases water pollution loads to waterways** (as the soil is more easily transported during rainfall events). Animal wastes also contribute to pollution loads to water. Additional landscape changes for grazing (such as on-farm dam construction) can disrupt natural water flows and cause additional biodiversity impacts, such as supporting larger populations of kangaroos or pest animals such as goats, which survive in larger numbers where permanent water supplies exist. **Where land clearing is for cropping, pesticides and fertilisers can disrupt ecosystem function and contribute to water quality issues in nearby waterways.**”*

2. Lowering GHG intensity at the expense of animal welfare and public health is a dead end.

Rearing livestock and poultry fast in industrial farming systems can be considered ‘efficient’ in narrow commercial terms but some also claim it is ‘carbon efficient’ production method.

The UK has long been a leader in animal welfare, and RSPCA **comparisons of UK and Australia animal welfare regulations in farming** show UK standards are far higher. The UK animal welfare legislation have largely been value-based decisions, but they have also allowed the UK to lead the way in reducing antibiotic use in farming, critical to address global public health risk around antimicrobial resistance (AMR). Most industrial meat production system rely on the routine use of antibiotics to compensate for their poor welfare standards. Save our Antibiotics estimate **Australian’s pig and poultry farming uses three and 17 times the levels of antibiotics respectively, compared to the UK.**

And importantly, from an environmental point of view, we are increasingly able to show low animal welfare systems are also harmful to the environment, both on carbon and on many other metrics. WWF’s **Driven to Waste** on the production waste in the global food systems reports shows poor sanitation and animal husbandry is one of the drivers of farm-stage waste in animal agriculture, which accounts for 40% of ghg emissions of food waste at farm level, which itself is responsible for 16% of all agricultural emissions.

Driven to Waste’s case study of the US broiler chicken industry shows increasing levels of waste are driven by poor animal welfare. Mortality and disease contribute to 637,000 tonnes of chicken being wasted per year in the US, and this rises to even more catastrophic levels with disease outbreaks, such as the 2015 avian flu, which are driven by the same poor welfare standards.

The UK has lots of problems to address with its own intensive poultry industry, which makes up 95% of its production, as set out in **We need to talk about chicken**. Chicken is also often promoted as a “carbon-efficient” source of meat, but it is clear that lowering carbon emissions by industrial production not only comes at too high a cost in terms of welfare and

antibiotic use but, because it is profitable, has also led to an overall increase in production and emissions.

3. GHG intensity data has to be interpreted with care.

There is huge variation in footprints of production systems between and within countries, this is especially true for beef, lamb, dairy, and fish farming. Country averages can be misleading, and it is inappropriate to use average environmental performance to inform trade policy that was trying to incentivise sustainable farming.

Particular issues worth highlighting with the GHG intensity data used in *Green Trade*:

- As noted in the footnotes, the GHG emissions data included in *Green Trade* may not include the impact of recent deforestation and that is likely to be significant issue for some countries. The data included in the Australia figures, for example, is based on twenty-year average deforestation from 1990-2010, which would not reflect recent rises in deforestation rates. WWF's ***Riskier Business*** classifies Australia as a high-risk commodity provider as it has the highest rate of deforestation in the OECD. It's rate of tree loss cover has risen by 34% between 2016-2018, largely driven by the livestock industry.
- Although GHG data for food and farming are good, some elements of the methodology are not yet standardised. This leads to differences in calculations which have implications when we compare farming systems.
 - land sequestration or soil carbon methodologies still vary, and standard approaches are being developed by the IPCC, Currently the UK's three leading footprint tools can give different results based on the same data, and this problem particularly affects the footprint of livestock farming
 - system boundary and modelling methods used for the lifecycle carbon analysis will affect the extent and way the food supply chain is included, as previously discussed including or excluding ghg impact of land conversion or deforestation can cause huge variation in the calculations, as can the approach to modelling methane.
 - And finally, there are a variety of methodologies for assigning GHG emissions at product level i.e. per kg of beef or lamb, which can have a significant effect on calculations of GHG intensity. The effect allocating carbon between multiple products can have is shown by **Netherlands beef from a solely beef herd having almost twice the GHG intensity of beef from dairy herds which produce both meat and milk over its life.**

THE WAY FORWARD

Globally, food and farming are amongst the biggest drivers of carbon emissions and nature loss. WWF is working with leading academics to improve the data on the environmental impacts of food and making this available to ensure consistent decision making and policy development. The incentives for a transition to sustainable agriculture need to reflect the multiple ways food production links to climate, nature, public health and animal welfare. Simple country level comparisons of GHG intensity could give the impression there is little difference in the environmental and animal welfare standards of different agricultural systems, but this briefing demonstrates why that this is not the case.

WWF is proposing the UK develop minimum core standards, including environmental standards, which would ensure all food imported into the UK meets comparable levels of climate, habitat, biodiversity, and water protection to those required in the UK. This will ensure the UK's transition to sustainable farming is not undercut at home and also drive transformation of the global food system, by supporting the best practice of farmers overseas.

Tanya Steele, Chief Executive at WWF, said:

“No one wants the food they buy to come at the cost of the planet, but the UK government’s efforts strike a trade deal with Australia - a laggard on climate and nature - risk setting a precedent that undermines its commitments to tackle the climate and nature crisis. Unless we adopt core standards for the food we import, trade deals with big agricultural exporters with low environmental and animal welfare standards, like Australia, will be a huge blow to greening the UKs farming and supply chains.

“Trade deals have the potential to support the UK in developing the industries of the future, including sustainable farming, making us greener and more resilient - but this will only happen if there are proper safeguards in place. That is why - for the sake of people and planet - the UK government must now set out core standards for all food brought into the UK. This should be at the heart of wider efforts to drive a global shift towards modern, sustainable farming, a shift that is essential if we are to succeed in tackling the twin threats of climate change and nature loss.”

WWF’s **briefing on core standards and the proposed Australia trade deal** provides more information on WWF’s proposals on trade to support a transition to sustainable agriculture.

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