

RURAL ECONOMY AND CONNECTIVITY COMMITTEE
SUBMISSION FROM MOREDUN RESEARCH INSTITUTE
THE DRAFT CLIMATE CHANGE PLAN (RPP3)

1. The Moredun Research Institute is one of the Scottish Government's Major Research Providers (MRPs), specifically engaged in policy-relevant research on sustainable livestock production through improving animal health. Moredun has a long and proud history of providing practical solutions to livestock health issues through the production of novel diagnostic tools, vaccines and disease control strategies. Climate change is a key component of this as it has a direct effect on the prevalence, incidence, intensity and spread of key livestock diseases. Conversely, livestock are responsible for a significant proportion of agricultural greenhouse gas emissions (GHGs), which contribute to climate change. We have been working closely over recent years, through the Scottish Government-funded Strategic Research Programme, with policy teams in Climate Change and Agriculture and also Animal Health and Welfare to provide an evidence base on how climate change is affecting our livestock and how we might help mitigate GHG emissions associated with the livestock sector in Scotland and beyond. That work has been used to inform the Scottish Government's draft Climate Change Plan.
2. The draft Plan gives a very clear overview of where we are now in reducing GHG emissions across the respective industry sectors in Scotland. More focus will inevitably fall on agriculture as other sectors of industry reduce their emissions quickly. This is largely due to the long-term intrinsic/intractable nature of some of the sources of agricultural emissions. The Plan does identify where relatively quick gains can be achieved e.g. encouraging farmers to undertake carbon audits and an element of soil testing. However, we are very pleased to see reducing GHG emissions through increasing livestock production efficiency and animal health status as a key objective within the Plan. The acknowledgement that this is a more long-term goal that will require further scientific evidence and engagement with the livestock sector and policy teams to progress is encouraging and realistic. We at Moredun are very keen to continue to be part of that process.
3. Grazing ruminants are responsible for approximately 50% of the greenhouse gas (GHG) emissions associated with agriculture in Scotland. Reducing the emissions intensity (i.e. the amount of GHG emitted per unit of meat or milk produced) of ruminants is, therefore, key to reducing agricultural emissions in Scotland, a key requirement for Scottish Government to meet internationally agreed GHG reduction targets, as embodied in the draft Plan.
4. Endemic, production-limiting diseases are a significant constraint on efficient and sustainable livestock production in Scotland and around the world. Dealing effectively with endemic livestock diseases represents an opportunity to reduce emissions from the livestock sector, ideally without compromising productivity or farm economics. As an example, previous research carried out at Moredun has shown that sustainable control of internal parasites in sheep through better

targeting of anthelmintic (drug) treatments not only improves their production efficiency but also significantly reduces their GHG emissions intensity [1].

5. Last year, researchers at Moredun, in collaboration with Scotland's Rural College (SRUC), were tasked by Scottish Government to deliver a rapid evidence assessment of the potential contribution that could be made towards reducing the intensity of GHG emissions from Scottish animal agriculture by eradicating or controlling livestock diseases, focusing on the main livestock species, cattle and sheep [2].
6. The assessment provided a comparative analysis of the available evidence for the control or eradication of twelve of the major livestock diseases in Scotland in terms of GHG abatement potential, cost-effectiveness and feasibility. This was based on qualitative analysis of the published and grey literature and expert opinion on disease prevalence, impacts on productivity and current control options. The assessment was further underpinned by quantifying the impacts of selected diseases on emissions and production using established GHG modelling methods. Overall, the evidence suggested that reductions in GHG emissions intensity could be achieved through the implementation of cost-effective control measures that impact on the parameters that emissions intensity is particularly sensitive to, i.e. (a) milk yield and cow fertility rates (dairy systems), (b) cow/ewe fertility and abortion rates, calf/lamb mortality and growth rates (beef and sheep systems), and feed conversion ratios, FCR (all systems).
7. GHG emissions savings were identified for all twelve diseases evaluated, but some diseases proved more tractable than others in terms of the availability of practical diagnostic and control options. In subsequent discussions with key livestock industry stakeholders, it was felt that selecting one major disease to attempt to eradicate would be difficult, given the nature of some of these diseases, the heterogeneity in the livestock sector, the different livestock species involved etc. Rather, it was felt that more could be achieved at a national level through an accumulation of 'marginal gains' by encouraging farmers to investigate the specific livestock health issues on their farms and to implement best practice towards their control e.g. improved diagnosis, monitoring and biosecurity. This could be incentivised, for example, by Scottish Government through a national Health Planning Scheme, involving improved engagement with veterinary services. Discussions are ongoing with industry stakeholders and Scottish Government policy teams on how best to progress and knowledge gaps identified in the GHG report are being addressed in the new Scottish Government Strategic Research Programme 2016-2021, in collaboration with the other MRPs.
8. There is currently a unique opportunity, with the development of a new UK agricultural policy and associated support payment schemes imminent, to provide a targeted approach to sustainable food production while meeting greening objectives including GHG reductions. It is vital that this is relevant and focused on Scottish farming systems which are very different from those south of the border. Where Scotland has the option to vary incentive/payment schemes, we would advocate targets based on sustainability matrices that have been the subject of a number of key scientific discussions and debates. This would provide a win-win-win for farmers, the Scottish Government and the public.

9. To summarise, we were very encouraged that tackling livestock/production disease, improving animal health and welfare, turning best practice into standard practice, cutting the costs of livestock diseases, reducing losses etc., are all embedded in the draft Plan. We think the targets and timelines for GHG reductions from the livestock/red meat sector are ambitious but reasonable and the associated policies and proposals feasible and practical. To address this, we need further scientific evidence for the role of animal health in GHG emissions from livestock, a better understanding of the economics of disease and the cost-effectiveness of intervention and effective knowledge exchange to encourage uptake of appropriate measures in practice. We, at Moredun, are ideally placed to contribute to this research and these discussions and would wish to continue working with the Scottish Government and the livestock industry to help take these important objectives forward.
10. I would like to acknowledge the contribution made by Dr Philip Skuce in preparing this response. Dr Skuce takes a particular interest and responsibility in matters relating to livestock and climate change.

Moredun Research Institute
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References

[1] Kenyon, F. et al. Reduction in Greenhouse Gas Emissions Associated with Worm Control in Lambs. *Agriculture* 2013, 3(2), 271-284; doi:10.3390/agriculture3020271

[2]

http://www.climateexchange.org.uk/files/7414/6054/5380/Livestock_Health_and_GHG.pdf