

RURAL ECONOMY AND CONNECTIVITY COMMITTEE
SUBMISSION FROM NOURISH SCOTLAND
THE DRAFT CLIMATE CHANGE PLAN (RPP3)

1 Nourish Scotland is a membership-based non-government organisation working for a fairer and more sustainable food system in Scotland. While Nourish is a member of Scottish Environment Link and Stop Climate Chaos Scotland, this submission represents Nourish Scotland's position.

Summary

2 Nourish welcomes the proposals and policies for agriculture in the draft Climate Change Plan. We are pleased that Scottish Government is emphasising the co-benefits, both to farm profitability and to the wider environment, of greenhouse gas reduction measures in agriculture.

3 We welcome the focus on livestock health and look forward to seeing the emissions intensity figures from QMS and the proposals for how to improve the animal health performance of under-performing livestock farms.

4 **However, in comparison with other sectors, expectations are far too low.**

5 Much more could and should be expected of agriculture in meeting Scotland's ambitious climate change targets, and the measures required will make farming businesses more profitable and sustainable.

6 We argue for:

- Strengthening two areas of the draft plan – **nitrogen** and **agroforestry**
- The inclusion of **organic** targets in the plan
- Investing in change: helping farmers and the farming institutions **learn** and **adapt**. Transformational change also requires vocal **leadership** on tackling greenhouse gas emissions in and through agriculture from the most senior people both in government and in industry bodies.

7 Finally, a clear framework for monitoring progress is needed, including:

- A clear and consistent baseline/metric. The draft plan acknowledges that the TIMES model does not work well for agriculture.

- A ranking of the relative contribution to the overall target which the different measures in the plan are expected to make over the period of the plan, and the anticipated level of investment in these measures;
- A more comprehensive analysis of emissions sector by sector, along with analysis of farmer opinion and practices, as provided in the DEFRA Agricultural Statistics and Climate Change series.

Specific comments

Nitrogen

- 8 Emissions from the production and application of bagged nitrogen accounts for around a quarter of agricultural emissions, or around 5% of Scotland's total GHG emissions. This is from a combination of the energy used and CO₂ emitted in producing nitrogen fertiliser and the N₂O emitted when fertiliser is applied.
- 9 Scotland had a net nitrogen balance of 161,000t in 2015, around 87kg per hectare of all agricultural land (crops and grassland). In other words, 161,000t more nitrogen was applied to the land than was taken off in crops/livestock products.ⁱ
- 10 Many farmers could use nitrogen much more efficiently, with financial benefits for their businesses as well as environmental benefits. The cheapest measure is to test their soil and ensure that the pH is right by putting on lime as needed: the right pH makes nitrogen more available to the crop, encourages clover growth and reduces the negative effects of aluminium in the soil. Using nitrogen fertiliser tends to make soils more acid, potentially setting up a cycle where N application is increasingly unproductive.
- 11 While all farmers should test their soils regularly and keep the pH within the optimum range, most don't. A 2016 report by SAC for example showed that only 21% of the soil on Skye is in the optimum range for growing grass or clover on mineral soils.ⁱⁱ **Making soil testing compulsory** will increase the proportion of farmers in Scotland whose land is at the right pH for using nutrients efficiently.
- 12 Many other factors influence how efficiently nitrogen is used on farm, and some farmers are much better than others at putting on the right amount in the right way at the right time. This applies to the use of organic nitrogen in manures and slurries. There is limited uptake in Scotland and the UK of more efficient measures of slurry spreading methods such as injection and the use of trailing shoes. Nearly all slurry is still spread with the splash plate, which has been banned in Germany (now one of the global leaders in nitrogen use efficiency).

- 13 We recommend a programme of support to machinery rings to invest in modern spreading technology suitable for local soil conditions. This could be linked to the proposals in the draft plan to set up co-operative anaerobic digestion plants, since application of digestate is also more efficient with modern methodsⁱⁱⁱ.

Nitrogen budget for Scotland

- 14 We welcome the proposal to ‘work with industry to develop a science-based target for reducing emissions from nitrogen fertiliser’ and recommend strengthening this proposal to include developing a full nitrogen budget for Scotland. Many countries now have established a ‘nitrogen budget’ showing how nitrogen flows through the food and farming system, and highlighting opportunities for reducing losses (with benefits to farmers and the environment).
- 15 Denmark, for example, has had a nitrogen budget since 1990, and this has helped to focus actions which cumulatively have halved the nitrogen losses to the atmosphere and to water.^{iv} There is an established UN methodology for this^v and Scotland hosts one of the leading global nitrogen research teams at the Centre for Ecology and Hydrology.

Operational Group

- 16 We propose the early establishment of an Operational Group (as part of the EIP-Agri scheme which is delivered through Scottish Government’s Knowledge Transfer and Innovation Fund) bringing academic expertise, government and industry together to agree cost-effective measures for improving nitrogen use efficiency over the next 15 years.

Agroforestry

- 17 While agroforestry is referred to in the section on co-benefits in Annex E of the draft plan, it does not feature in the main text either in agriculture or forestry. We note the aspiration that:
- 18 “By 2030 we want most farmers to have considered and undertaken appropriate planting of woodland/forestry and hedgerows. Farmers and land managers may also be receiving payments to sequester carbon in soils, woodland/forestry and hedgerows”
- 19 but again we think this is too little, too late.
- 20 Scotland is leading the UK in implementation of the Woodland Carbon Code which validates claims about carbon sequestration and thus is

able to attract private finance investment. This could be extended to well-planned and well-executed agroforestry schemes.

- 21 The UKCCC 'high ambitions' scenario estimates that a reduction of 0.16 MtCO₂e can be delivered by 2030 by establishing agroforestry on 0.6% of agricultural land area. This reduction would increase in subsequent years as schemes mature, and in our view 6% rather than 0.6 % is not an unreasonable target, provided that the right trees are planted in the right places.
- 22 As the recent ClimateXchange briefing from Forestry Research and James Hutton Institute states^{vi}:
- 23 "Agroforestry systems can provide multiple benefits, including diversification of farm income, shelter for livestock, fuelwood, carbon sequestration, nutrient management, reductions in soil erosion and leaching, biodiversity enhancement, and amenity value."
- 24 Evidence cited in that report from Scotland's long-running trial at Glensaugh showed 'no detectable decrease in livestock production over 12 years'.
- 25 Co-operative agroforestry schemes such as Pontbren can also encourage diversification and innovation, as well as improvements in livestock productivity and catchment hydrology.^{vii}
- 26 Agroforestry at scale could make a significant contribution to meet the ambitious increased planting targets. We welcome the inclusion of agroforestry as a measure in SRDP but note the very low level of uptake and the lack of effective promotion of the benefits to farmers (though we acknowledge the valuable efforts of Soil Association Scotland and SNH in this respect). We also recognise the good work being done on sheep and trees by the National Sheep Association.^{viii}
- 27 At farm level, agroforestry should be discussed as an option as part of carbon audits and whole farm reviews. At regional/landscape level, co-operative schemes for agroforestry at scale should be promoted.
- 28 Again, we recommend an Operational Group to look at how agroforestry could be promoted and implemented more effectively. One option is the establishment of a dedicated virtual team bringing together expertise from farmers already engaged in agroforestry, SNH, RPID, Forestry Commission, RSPB, Scottish Woodland Trust, NFU, SEPA and Scottish Water to promote agroforestry jointly.

Organic agriculture

- 29 It is remarkable that the draft plan makes absolutely no reference to organic farming, despite the Scottish Government's 2016 Organic Ambitions plan, where the Cabinet Secretary highlighted the co-benefits of organic farming:
- 30 "We want to create a stronger Scotland, one that is fairer and more prosperous and in 2015, our Year of Food and Drink, I announced that Scotland's food and drink sector was booming, with consistent year on year growth which is strengthening the Scottish economy. Organics has an important role to play in adding to this growth so that we continue to see a sustainable increased turnover.
- 31 We recognise the wider public benefits of organic farming such as encouraging biodiversity, tackling climate change, improving soils and protecting our water environment."
- 32 Organic Ambitions specifies in details the links between organic production and meeting climate change targets.
- 33 Research consistently identifies that organic farming uses less energy and delivers lower greenhouse gas emissions per unit of area and in most cases per unit of product.^{ix} For example, in a study of fifteen Irish farms engaged in suckler-beef production (five conventional, five in an Irish agri-environmental scheme, and five organic units) the average emissions from the conventional units were around 15% higher per kg of beef than the organic units, and more than twice as high per hectare^x.
- 34 In addition, organic management typically leads to higher soil carbon sequestration^{xi}.
- 35 There are many reasons for this. Organic farming does not use bagged nitrogen (a major contributor to ghg emissions in agriculture), relying more on biological nitrogen fixation from clover and other legumes. It also uses much lower levels of anthelmintics and antibiotics, both of which can have adverse impacts on soil biota, particularly dung beetles^{xii}. Dung beetles help to reduce greenhouse gas emissions from cow pats by up to 7% and by the pasture as a whole by 12%.^{xiii}
- 36 Scotland is an outlier in Europe in terms of its organic food market (at around 0.5% of grocery spend it is around twenty times smaller per

head than for example the Swedish and Danish markets). However, signs of growth are visible:

- Scots are significantly more likely to opt for organic – they represent 11% of all organic consumers in the UK
- 50% of Scottish consumers would buy more organic food and drink if it were available
- 36% of Scottish independent retailers say sales have increased over the last 12 months and 64% expect this to rise in 2016
- Scotland's organic wholesalers have seen a steady increase in sales across recent years – organic sales from Glasgow-based Greencity Wholefoods increased by 17% in 2015

37 The land area under organic management in Scotland declined from 4% to 2.3% in the five years to 2015, while in the same period the EU average increased by 21% to over 6%. Organic land area increased in those five years by 52% in Ireland and by 61% in France. ^{xiv}

38 Organic food is increasingly part of the mainstream, with McDonalds UK using organic milk for all its teas and coffees. Costco has overtaken Wholefoods to become the largest US organic retailer with \$4bn in organic sales and is now lending farmers money to expand organic production to meet demand. ^{xv}

39 Organic farming also brings multiple co-benefits:

- Higher gross margins and farm profitability, both in Europe and globally^{xvi}. Anecdotally, organic dairy farmers have been unaffected by the dairy crisis in Scotland.
 - More employment on farms. ^{xvii}
 - Increased biodiversity below and above ground. Organic farming demonstrates clear advantages for biodiversity over conventional farming. Depending on altitude, organic farms have between 46 and 72 per cent more semi-natural habitats and host 30 per cent more species and 50 per cent more individuals than non-organic farms. ^{xviii}
 - Reduced antibiotic usage, supporting the implementation of the O'Neill report. ^{xix}
 - Export opportunities into the European and global markets
 - Enhancing the food offer for tourists: many of our visitors come from countries with vibrant organic sectors and will be used to eating organic food at home

- 40 We call for an ambitious target for organic farming (eg 5% of land in each of the three CAP 'regions' to be organic or in conversion by 2020). Achieving this will need mainstream support from QMS, Scotland Food and Drink, Scottish Crofting Federation and NFUS, as well as from Scottish Government. These area-based targets for organic management must be matched by commensurate investments in supply chains and marketing of Scottish organic produce.
- 41 We think the notion of a 'low carbon' marketing scheme to be unhelpful and unnecessary. While many non-organic (and not-yet-organic) farms demonstrate excellent practice in fertiliser use, soil management, animal welfare and so on, there is an established organic brand at European and global level which reads across all these issues, has an inspection and certification infrastructure, and provides a passport to export markets as well as high brand recognition among Scottish UK consumers.
- 42 Organic standards ensure a number of co-benefits such as inspections of animal welfare, antibiotic use, prohibition of GM feed. A low carbon marketing scheme which focuses solely on greenhouse gas emissions could, depending on how the analysis is done, favour the most intensive and confined livestock systems^{xx}.

Investing in change

- 43 We welcome the existing initiatives such as 'Farming for a Better Climate' and the proposal for 'climate change champions'. However, the draft plan wholly underestimates the investment of resources and political capital needed to transform agriculture in Scotland to become a world leader in green farming and play its full role in meeting climate change targets.
- 44 This is fundamentally a cultural as much as a technical change: and ISM provides a useful framework for understanding the factors which encourage or discourage low carbon behaviours in Scotland's farming industry.
- 45 The DEFRA report on agriculture and climate change statistics^{xxi} surveys farmers regularly.
- 46 In 2016 they found that 9% of farmers reported that it was "very important" to consider GHGs when making decisions relating to their land, crops and livestock and a further 39% thought it "fairly important", a small decrease for both on 2015. Just over half of respondents

placed little or no importance on considering GHGs when making decisions or thought their farm did not produce GHG emissions.

- 47 For those farmers not undertaking any actions to reduce GHG emissions, informational barriers are important i.e. the lack of information (35%) and lack of clarity on what to do (29%) were key reasons for not taking action. This could be described as ‘personal capacity for action’. However there is also a wider issue around understanding or willingness to take action with 47% not believing any action is necessary, 18% believing there is not much they can do and 11% believing they have done enough.

Leadership

- 48 Influential farming bodies have not to date taken a sufficient leadership role in relation to climate change and at times appear to collude with the perception that ‘tackling climate change’ and ‘helping farms be profitable’ is a zero sum game, when the evidence is to the contrary. Other sectoral bodies take a more positive approach to the tightening of the pro-climate regulatory framework, which itself drives innovation^{xxii}.
- 49 The splitting of the previous RACCE committee into two means that Government needs to underline its core message that climate change is everyone’s business: there is not one place to talk about the food and farming economy and forget the environment and another place to talk about food and farming’s impact on the environment and forget the economy.
- 50 While we welcome the commitment to ‘Ensuring much of the £4.6 million we provide annually to the Farm Advisory Service is used for advice on mitigation’ we think this service may be under-powered in relation to the scale of the task in terms of changing attitudes, building farmer knowledge and skills in relation to ghg mitigation, and supporting the investments to help farmers adapt their businesses. As a comparator, the Danish agricultural advisory services collectively employ 3,000 people.^{xxiii}
- 51 Advisors themselves may also need more training to ensure they are fully up to speed. Climate change mitigation needs to be a primary goal of the farmers they advise, on a level with and complementary to financial goals, not a nice to have. The French law on agroecology for example includes a commitment to retrain not just advisors but also the lecturers who are teaching the next generation of farmers.

- 52 Nourish calls for farming like other professions to have its own continuing professional development framework (CPD). Whether this is delivered on a college basis or on a peer-to-peer basis, it could support dissemination of new thinking and best practice on climate change mitigation and a range of other modernization issues
- 53 Finally, we would emphasise that agricultural (and food) policy should be aligned more closely with the climate change mitigation imperative and more generally with the Sustainable Development Goals and the progressive policy agenda in Scotland. We need a new **social contract** with farmers, emphasising and supporting the service they provide to the public in terms of tackling climate change as well as nourishing people and nurturing wildlife.
- 54 Public support for agriculture depends on agriculture delivering public goods.

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