

Technical Annex 5: Agriculture and land use, land use change and forestry

1. Detailed assessment of policies

In Chapter 5 we set out our assessment of the impact of policies intended to reduce emissions in the agriculture and land use, land use change and forestry (LULUCF) sectors. We classified those policies at risk of failing to deliver savings, either due to design and delivery problems, or because they are currently unfunded.

Table A5.1 sets out the rationale for at-risk policies.¹

Table A5.1: At risk – policies with design/delivery problems or lack of funding	
Policy	Why the policy is 'at risk'
Agriculture	
Afforestation policies	Tree planting rates across England and the devolved administrations are below the additional 10,000 ha/year required to contribute towards the fourth carbon budget.
GHG Agricultural Action Plan	Targets cost-effective measures but reliance on a voluntary approach risks the delivery of carbon savings. No mechanism in place to evaluate if the policy is delivering emissions reductions in line with the ambition of the Plan.
RHI from April 2016	No commitment to RHI funding after the 2015/16 financial year.

¹ See DECC's Annex D: Policy savings in the projections at <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2014>

2. Indicator table

Table A5.2: The Committee's agriculture indicators						
AGRICULTURE		Budget 2	Budget 3	Budget 4	2013 trajectory	2013 outturn
Headline indicators						
Emissions (indicative % change from 2007 reflecting LCTP ambition scaled to UK)						
CO ₂ e emissions		-6%	-9%	-16%	-4.0%	-3.3%
GHG emissions (% change in tCO ₂ e against 2007)	N ₂ O	-4%	-5%	-10%	-2.2%	-0.9%
	CH ₄	-8%	-12%	-22%	-4.7%	-4.4%
	CO ₂ *	n/a	n/a	n/a	n/a	n/a
Source emissions (% change in tCO ₂ e against 2007)	Soils	-4%	-6%	-11%	-2.4%	-0.5%
	Enteric fermentation	-6%	-10%	-18%	-3.9%	-4.6%
	Animal waste	-11%	-16%	-30	-6.5%	-4.4%
	Machinery/fuels*	n/a	n/a	n/a	n/a	n/a
Drivers**						
tN ₂ O emissions per thousand hectares of arable land	2007 = 2.5	2.4	2.4	2.3	2.4	2.6

Table A5.2: The Committee's agriculture indicators

tN ₂ O emissions per thousand hectares of pasture land	2007 = 1.4	1.4	1.4	1.3	1.4	1.3
tCH ₄ emissions per tonne of cattle and calf meat, dressed carcass weight	2007 = 14.9	14.0	13.6	13.6	14.4	14.0
tCH ₄ emissions per thousand litres of milk	2007 = 0.67	0.59	0.56	0.56	0.62	0.65
tCH ₄ emissions per tonne of sheep and lamb meat, dressed carcass weight	2007 = 13.6	12.8	12.4	12.4	13.1	13.1
tCH ₄ emissions per tonne of pig meat, dressed carcass weight	2007 = 1.2	0.9	0.7	0.7	1.0	1.2
tCH ₄ emissions per tonne of poultry, dressed carcass weight	2007 = 0.06	0.04	0.04	0.04	0.05	0.06
AGRICULTURE		Budget 2	Budget 3	Budget 4	2013 trajectory	2013 outturn

Supporting indicators

Farming Practice

Measures where greater confidence exists (e.g. proven technology, considered best practice, consistent abatement results) but uncertainty about baseline use.

Nutrient management – including improved mineral and organic N timing, separating slurry and mineral N, using composts, and making full allowance for manure N	% of hectares where measures are in place	Better evidence about current farming practice is required to develop full trajectories.
Livestock management – including breeding for fertility and productivity	% of livestock of different production/fertility efficiency	Better evidence about current farming practice is required to develop full trajectories.
Manure management	% of manure/slurry stored in covered tanks or lagoons	Better evidence about current farming practice is required to develop full trajectories.

Table A5.2: The Committee's agriculture indicators

Anaerobic Digestion	Installed AD capacity using manures (MW)***	68	102	n/a	Less than 2% of holdings have AD (2014)
Measures that require further evidence to establish appropriateness and effectiveness in UK and in regional contexts					
Soil management (reduced tillage/drainage), nitrification inhibitors, and using more N-efficient plants (species introduction and improved N-use plants)	% of hectares where measures are in place	Not suitable for all hectares. Requires development of evidence base to resolve possible conflicts with other goals and to determine applicability, GHG benefits and costs under different conditions.			
Livestock management (including maize silage and dietary additives in form of propionate precursors or ionophores)	% of livestock consuming different diets and feed additives	Not suitable for all animals/farms. We will monitor the development of the evidence base around these measures, including applicability, net GHG benefits and resolution of possible conflicts with other sector goals.			
Policy Milestones					
Government policy review (2016): <ul style="list-style-type: none"> Review the voluntary approach Consider policy options for intervention Set triggers for intervention 	2016				Defra has started work on the Review
Deliver the new Smart Inventory, without further delay	2016				On-target for 2016 roll-out
Other drivers					
Crops/soils: Crop yields (e.g. cereals), cropping areas, N ₂ O emissions per hectare of cultivated land, N ₂ O emissions per unit of fertiliser use, output of product per unit of fertiliser use.					
Livestock: tCH ₄ /tonne dressed carcass weight (cattle & calves), weight of carcass produced per day of age, calves produced per cow per year.					
General: We will monitor development of the evidence base and R&D support for the various mitigation measures. We will also track upcoming CAP reform negotiations (to be complete by 2014) and implications for farming practice and emissions.					
LAND USE, LAND USE CHANGE AND FORESTRY			By 2030		

Table A5.2: The Committee's agriculture indicators

Headline indicator

Emissions (annual savings from carbon sequestration by 2030)

CO₂ sequestered

1 MtCO₂e

Supporting indicators

UK woodland planting

At least 21,000 hectares/year from 2015

Policy Milestones

Development and implementation of a woodland creation programme

Government has set ambition for England of average rate of 5,000ha/year by 2060

Include upland peat emissions in the LULUCF inventory

By 2017

Develop a policy framework to increase peatland restoration

By 2017

* CO₂ abatement potential not factored into first four budget periods, and 2007 levels are based on actual.

** Broadly consistent with LCTP ambition and industry roadmaps. Methane emissions intensity of livestock output for Budget 4 unchanged from Budget 3 as industry roadmaps only set to 2022. UK Inventory at present will not fully capture reductions in emissions as a result of uptake of particular measures. Intensity indicators for budget periods assume constant output. Should output exceed assumed levels then lower intensities would be needed to deliver absolute emissions reduction.

*** Handling beef, dairy and pig manures and slurries.

**** 2007 baseline = 10.7 thousand hectares. Source: Forestry statistics 2010, figure 1.4.

Note: Numbers indicate amount in last year of budget period i.e. 2017, 2022, 2027. These indicators will be updated in work for the 5th carbon budget.

Key: ■ Headline indicators ■ Implementation indicators ■ Milestones ■ Other drivers