

Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
------	----------	-------------------	-----------	-----------------------	---	------------

From the following draft action plan, we need to identify the priorities for action:

1. No cost and low cost actions. Easy-fix quick results.
2. Future proofing for business continuity. Longer term but still fairly easy responses, but perhaps requiring significant capital investment.
3. Identifying the biggest economic benefits of taking action. Long term aspirational goals requiring research and major investment.
4. Developing a better understanding of energy cost inputs and emission sources through good record keeping and footprinting.

Improve public perception	<p>Prior to any 'on-farm' or rural renewable energy planning application, develop a communications plan to address:</p> <ul style="list-style-type: none"> ❖ potential public concerns that the project could be perceived as 'industrialization of the countryside'. ❖ potential public concerns that the project could be perceived as waste management by the 'back door'. <p>Survey land managers to determine which climate change projects they want to do and identify sources of help for them to carry out those activities.</p> <p>Raise awareness about the environmental credentials of technologies that are similar in scale to domestic oil boilers.</p>					
---------------------------	---	--	--	--	--	--



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<ul style="list-style-type: none"> ❖ Promote the fact that these technologies are available to all rural households and not just farmers. <p>Provide information to Planners on types of agricultural renewable energy projects.</p>					
Build adaptive capacity	Identify the information needed and develop and disseminate the communications necessary before adaptation actions can be undertaken.					
Increase energy efficiency	<p>Encourage energy conservation in all types of agricultural buildings:</p> <p>In houses and accommodation.</p> <ul style="list-style-type: none"> ❖ Develop initiatives to make energy auditing more straightforward and widespread. ❖ Identify how, where and how much energy input is required through regular meter reading. ❖ Identify where biomass boilers could be specified, size them to meet base load and run flat out. <p>In agricultural buildings.</p> <ul style="list-style-type: none"> ❖ Maximise energy efficiency in all new builds. 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<ul style="list-style-type: none"> ❖ Promote the use of insulation particularly in the poultry sector. ❖ Identify how, where and how much energy input is required through smart metering or regular meter reading. ❖ Consider the embodied carbon / energy content of construction materials and identify opportunities for material substitution. Be wary of substituting materials if it makes a building prohibitively expensive. <p>In farm vehicles</p> <ul style="list-style-type: none"> ❖ Investigate novel sources of fuel and power systems that will help deal with rising costs of diesel. ❖ Investigate where production of on-farm fuel is viable. 					
Identify low carbon energy sources	<ul style="list-style-type: none"> ❖ Those that are economic as stand-alone systems. ❖ Those that are economic when clustered (such as biomass which needs around 10 large boilers for a sustainable fuel supply 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<p>chain).</p> <ul style="list-style-type: none"> ❖ Where anaerobic digestion has the potential for supplying clusters of householders and rural businesses. ❖ Keep a watching brief on Environment Agency protocols for digestate (a UK digestate standard is needed) from anaerobic digestion and environmental permitting procedures. 					
Identify the potential for the export of low carbon energy services	<p>Heat via heat pipes.</p> <ul style="list-style-type: none"> ❖ Identify potential nearby heat loads (animal sheds, potential for other small businesses based at the farm etc.). <p>Electricity via connection to the grid.</p> <ul style="list-style-type: none"> ❖ Determine the proximity of and cost of grid connection. ❖ Determine the potential for anaerobic digestion of farm wastes (slurry and crop processing wastes). <p>Fuels – bio-fuels, biomass (wood fuel).</p> <ul style="list-style-type: none"> ❖ See bullet in on-farm vehicles above. 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
Promote good nutrient management	<p>On land Already undertaken as part of good agricultural practice:</p> <ul style="list-style-type: none"> ❖ Identify nitrate vulnerable zones. ❖ Minimize NOx emissions to atmosphere. ❖ Implement a programme of soil testing (especially in the livestock sector as soil testing is well established in the arable sector) prior to the application of fertilizer. ❖ Compare the impacts of natural v. synthetic fertilizers. ❖ Use less greenhouse gas intensive fertilizers. ❖ Apply nitrogen optimally to crops and pastures. <p>Extend to:</p> <ul style="list-style-type: none"> ❖ Increase uptake of sensing technology and precision application systems. <p>Livestock feed</p> <ul style="list-style-type: none"> ❖ Identify the university research programmes that examine the potential for 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<p>different feeding regimes or food additives to reduce CH₄ emissions to atmosphere.</p> <ul style="list-style-type: none"> ❖ Future livestock feeds to be blended to minimise greenhouse gas emissions. ❖ AD digestate is potentially a valuable source of nutrient, but more information on it's nutrient content and leachability is needed, especially when they are destined to be used within Nitrate Vulnerable Zones (NVZs). 					
Protect water courses and efficiently manage water resources	<ul style="list-style-type: none"> ❖ Encourage Planning Officers to be more supportive of water storage structures. ❖ Provide information to Planners on the wider need for increased water storage. ❖ Identify current and potential future water demand. ❖ Investigate the potential for: on-farm reservoir use, rainwater harvesting, better irrigation methods and scheduling, becoming a local water supplier for irrigation. ❖ Collect rainwater for irrigation and drinking water in times of drought. ❖ Repair leaks in irrigation systems. ❖ Investigate drought resistant varieties of 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<ul style="list-style-type: none"> crops and alternative livestock breeds. ❖ Investigate abstraction licenses. ❖ Reduce the impact of abstraction during the summer months. ❖ Reduce run-off with contoured hedges or vegetated buffer strips. ❖ Maintain efficiency of existing drainage systems / invest in drainage / storage. ❖ Use cover crops to reduce soil exposure. 					
Understand the use of land based carbon / greenhouse gas footprinting tools	<p>Such as CALM (CLA)http://www.cla.org.uk/Policy_Work/CALM_Calculator///9462.htm/ and C-Plan (http://www.cplan.org.uk/)</p> <ul style="list-style-type: none"> ❖ Understand what the use of such a tool may entail (carbon equivalent emission factors). (There is one emission factor per head of each type of livestock, regardless of feeding regime which affects CH₄ emissions). 					
Increase carbon storage through effective land management	<ul style="list-style-type: none"> ❖ Bring woodlands back into productive management. ❖ Engage the Forestry Commission and Natural England in the establishment of 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<p>new woodlands and hedge planting / restoration.</p> <ul style="list-style-type: none"> ❖ Increase the amount of tree cover through: community forests, Warwickshire tree scheme, re-instatement of hedgerows. ❖ Investigate the potential for setting up a Local Authority grant scheme for farmers seeking to plant new hedgerows and trees. ❖ Increase the amount of organic matter in soil to improve soil structure and reduce erosion. ❖ Identify sites where increases in area of grassland are more beneficial (in terms of carbon storage) than other land uses. ❖ Investigate the use of minimum tillage and identify any unexpected side effects such as pollution swapping. <p>An effect of climate change may be that the UK is under increased pressure to produce food to feed a growing population. Taking land out of agricultural production may not be an option in the future.</p>					
Increase the uptake of appropriate	<ul style="list-style-type: none"> ❖ Examine where multi-purpose and energy crops can be grown (i.e. willow and 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
alternative, multi-purpose and non-food crops	<p>miscanthus).</p> <p>Note - miscanthus is harvested in winter and machinery access is required during harvest. It is therefore not suited to wet and waterlogged ground. Harvesting miscanthus on wet land results in increased soil compaction.</p> <ul style="list-style-type: none"> ❖ Examine the potential for support through the environmental stewardship scheme http://www.defra.gov.uk/erdp/schemes/es/default.htm ❖ Identify and quantify the benefits to biodiversity from growing energy crops that require big headlands in providing wildlife corridors through Warwickshire. ❖ Identify new uses of plant-derived materials that are able to substitute fossil fuel based products such as plastics, polymers, paints and pens. ❖ Support the development of bio-refineries, allowing extraction of a wider range of useful products from plant based feedstock. 					
Improve site	<ul style="list-style-type: none"> ❖ Identify the potential impacts associated 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
management and layout to adapt to changes in the climate.	<p>with climate change and extreme weather events and plan to minimize the risks of such impacts.</p> <ul style="list-style-type: none"> ❖ Examine field layouts in areas prone to flooding or other weather related event which could halt productivity and implement simple adaptation measures (such as gate location – do not locate gate in areas prone to flooding or on heavy clay soils). ❖ Identify the use of shelter belts for protecting livestock and crops from strong winds, sun and heat. ❖ Identify where buildings need to be designed to cope with weather extremes and flooding. ❖ Consider entering into a (agri-environment scheme) higher level stewardship agreement where payment may be available to farmers who accept additional flooding on their land. ❖ Sign up for flood alerts from the Environment Agency. ❖ Ensure livestock graze on fields protected from flooding or water logging. ❖ Encourage research to fully understand the 					



Draft Action Plan 2008 – Sustainable Agriculture, Horticulture and Land Management in Warwickshire

Task	Activity	Lead and partners	Timeframe	Resource Implications	Projected Carbon Reduction (Or equivalents)	Monitoring
	<p>interactions between peak river flows and wetland habitats.</p> <p>Note – the creation of wetlands and flood storage areas may conflict with the need to produce food.</p>					

