

DAIRY ROADMAP 2015



The Dairy Roadmap demonstrates that action is being taken and changes are being made in order to protect the environment whilst still moving the industry forwards. This work fits in line with the advice from government and illustrates a hardworking, innovative and responsible industry.

80,000 jobs within the dairy industry¹

The total turnover of the British dairy industry is **£6 BILLION**, around **10%** of total food and manufacturing output²

The UK is the **THIRD-LARGEST MILK PRODUCER** in the EU after Germany and France, and the tenth-largest producer **IN THE WORLD**³

98% of people regularly eat or drink dairy products⁴

There are currently **1.84 MILLION** dairy cows in the UK⁵

- 1 Dairy UK, http://www.dairyuk.org/files/201502_Dairy_UK_Manifesto_General_Election.pdf
- 2 The cattle site, <http://www.thecattlesite.com/articles/1201/why-dairy-farming-matters/>
- 3 Parliament research briefings, <http://researchbriefings.files.parliament.uk/documents/SN02721/SN02721.pdf>
- 4 2012 telephone survey for The Dairy Council and DairyCo, <http://www.dairyuk.org/industry-overview/consumption-sales>
- 5 AHDB, Dairy <http://dairy.ahdb.org.uk/market-information/farming-data/cow-numbers/uk-cow-numbers/#.VijZamflsdU>

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FOREWORD

The British dairy sector has consistently demonstrated its commitment to environmental sustainability and efficiency through the sector's exemplary performance against its targets in the Dairy Roadmap.

This is the third report since the Roadmap was launched in 2008, uniting the supply chain to agree challenging and monitored environmental and sustainability targets. The NFU, DairyUK and AHDB Dairy have collaborated to ensure a whole-supply chain picture. As international schemes have evolved, including the Dairy Sustainability Framework, we have sought to align ourselves to further increase the benefits. Domestically, the Red Tractor scheme continues to certify that food has been produced to independently inspected standards at farms and manufacturing sites.

This edition of the Dairy Roadmap shows clearly some of the excellent work being done by farmers and processors. I am a dairy farmer and I know that my future relies on my business operating to world leading standards, whilst minimising the impact of dairy production on the environment.

Retailers have continued to show their support for the Dairy Roadmap and are fully engaged with the project as we move forwards together.

The progress that has been made so far is astounding and we will continue to challenge ourselves with targets for 2020 and 2025, ensuring that the dairy supply chain is world leading in environmental sustainability.

Rob Harrison

Chairman of the Dairy Roadmap
and Chairman NFU Dairy Board

THE DAIRY ROADMAP

The Dairy Roadmap unites Britain's dairy industry including farmers, dairy manufacturers, retailers, government and industry partners. Together, the supply chain defines targets and produces regular reports on progress that the industry is making on environmental matters.

We started in 2008 as the Milk Roadmap which focused solely on the liquid milk sector. We published further reports in 2009 and 2013. In this 2015 report you will see a number of new targets and some targets that have been expanded upon. This demonstrates that we are constantly developing what we do on environmental responsibility. With each report, the ambition and reach of the industry has grown and this is reflected in the way the Roadmap has developed.

As you read through this report you will see that our dairy farmers and dairy manufacturers have made excellent progress against the tough targets we have set for ourselves but there are still some areas where we have work to do.

There is no end point, no finish line on environmental sustainability and we will continue to challenge ourselves to keep progressing in this area.

DAIRY FARMER TARGETS

Since 2008, the Dairy Roadmap has reported progress against producer targets and goals, put in place to keep the industry moving towards a more sustainable future.

This report provides updates on targets set for 2015, 2020 and in turn sets new targets for 2025. It shines a light on the dairy industry, proving that despite an extremely volatile time, progress with environmental measures continues to march forwards on farms.



2015 DAIRY FARMER TARGETS

- 1 90% of dairy farmers are actively nutrient management planning
- 2 65% of dairy managed farmland into environmental stewardship schemes
- 3 70% uptake of water use efficiency measures
- 4 10-15% of dairy farmers investigating and/or implementing at least one form of renewable energy
- 5 50% of dairy farmers implementing new developments and/or technologies to reduce emissions from agriculture
- 6 Declining trend in serious pollution incidents on-farm
- 7 Dairy farmers encouraged to calculate carbon footprints and implement carbon reduction plans

1

90% OF DAIRY FARMERS ARE ACTIVELY NUTRIENT MANAGEMENT PLANNING

Good nutrient management can bring a number of important benefits including minimisation of greenhouse gas emissions (GHG's), reducing the incidence of diffuse water pollution and helping farmers save money through optimising efficiency. The ability to progress with this target directly influences many others within the dairy roadmap.

Nutrient Management Planning helps to:

- Optimise use of on-farm nutrients
- Prevent excessive nutrient build-up
- Reduce fertilizer costs
- Maintain soil health for successful crop production
- Reduce environmental risks

A field nutrient management plan aims to match nutrient inputs (fertilisers and manures) to crop demand. As a consequence, yields are optimised and nutrient use is minimised, therefore minimum losses are made to the wider environment⁷.

In the 2013 roadmap report, 73% of dairy holdings were nutrient planning. In 2015, 77% of dairy holdings are now implementing nutrient management plans. In addition to this, 69% of these farmers are updating their management plan every year. This is a positive finding and illustrates that dairy farmers are utilising their management plans and reviewing them on a regular basis⁸.

⁷ Tried and tested New to Nutrient Management Guide: <http://www.nutrientmanagement.org/assets/12026>

⁸ DEFRA 2015- Farm Practices Survey, GHG mitigation practices data set https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/448954/ghgindicator-2mitigation-29jul15.pdf

2

65% OF DAIRY MANAGED FARMLAND INTO ENVIRONMENTAL STEWARDSHIP SCHEMES

The 2013 Dairy Roadmap report found that 69% of dairy managed farmland was currently within an Environmental Stewardship Scheme (ESS), therefore meeting the set target two years early.

This demonstrated some of the excellent work being completed on farm, including hedgerow management, protection of habitats and lowering inputs on grassland.

Since the last report these schemes have changed, with ESS being phased out, to be replaced with Countryside Stewardship.

The new scheme is narrowly targeted, which may remove many of the options where dairy farmers would have previously participated. However, within the Dairy Roadmap we will continue to monitor the work that dairy farmers are doing in this area, during a period of evolving government policy.

3

70% UPTAKE OF WATER EFFICIENCY METHODS BY 2015

As the population grows and more food is required, better water management will become as critical as the water itself. British dairy farmers take their commitment to the environment very seriously and are looking at ways to conserve water and cut costs without compromising on either animal welfare or dairy hygiene⁹.

In 2012, 78% of farmers were implementing water efficiency methods. Of these, 30% were collecting rain water, 94% re-using water from a plate cooler and 53% have diversified water supplies using a borehole. The industry is continuing to make improvements and encouraging further measures to be taken, which fit in line with the 2020 target in this report¹⁰.

Rainwater harvesting (RWH) is the collection and use of rainwater falling onto buildings which would otherwise have been diverted toward drains, lost through evaporation, or soaked into the ground. Potentially, there are both economic and environmental benefits of rainwater harvesting¹¹. A recent ADAS study found that dairy farms pay between £31 and £100 per cow, per year for water and could meet 20% of these needs from rainwater sources¹².

- 9 This is dairy farming, <http://www.thisisdairyfarming.com/discover/dairy-farming-facts/how-is-water-used-on-dairy-farms/>
- 10 Dairy Co effective use of resources survey (2012)
- 11 Environment Agency http://www.rainwaterharvesting.co.uk/downloads/farming_environment_agency_guide.pdf
- 12 <http://www.access-irrigation.co.uk/design-services/irrigation-agriculture/livestock-rainwater-harvesting>

CASE STUDY

GRAHAM BIRCH- DAIRY FARMER IN DORSET



Graham Birch owns a mixed arable and dairy farm in Dorset milking 260 cows, with replacement heifers and young stock. They produce approximately 2.6 million litres of milk per year. The cows are currently kept in housing all year round due to TB outbreaks and are bedded on rubber mattresses and home grown straw. Graham considers environmental efficiency to be vital in maintaining a sustainable business.

Waste Management

After a technical slurry separation process, all liquid slurry is applied to the land through modern techniques to reduce emissions. The main routes are with a dribble bar or soil injection systems.

Higher Level Stewardship (HLS)

All land on this farm has been in HLS since 2011. As part of this scheme many different things are being done to support the environment. These include:

- 2 year hedge cutting cycle
- Buffer strips near water courses
- Maintenance of archaeological features
- Habitat creation for target species, including:
 - Corn Buntings
 - Numbers of breeding Corn Buntings have been increasing since the scheme began.
 - Lapwing habitat
 - Skylark plots

This habitat creation then lends itself to help other wildlife on the farm such as barn owls which are breeding here. Graham stated that “despite the extra time and investment required, the benefits to the environment have been clear.”

“With the right treatment and care you would only have to seed it on the land once, for it to then re-seed the following years. It is treated as another crop on this farm which ultimately is beneficial to the environment and the farm itself.”

Water

After moving to the farm in 2007 a main priority was to reduce water usage and the associated costs. Rainwater Harvesting has been a key measure in achieving this. A second hand stainless steel collection tank is used and the water is safe for washing yards and as cattle drinking water, after processing through a UV purifier. As a further cost reduction technique, a new pump was fitted to a disused borehole and they now extract about 20,000 litres per day for the farm from this, meeting two thirds of the farms total water needs.

It is Graham’s long term dream to have a “totally self sufficient supply of water, whilst reducing usage.”

Energy

The farm is LEAF mark accredited which requires a certain amount of energy analysis to take place. Graham stated that this is “extremely useful to see where the biggest costs and to keep track of consumption rates.”

The farm has solar panels (10kw), as well as a solar hot water system for the farm house.

One of the most effective techniques this farm uses to save energy is through a heat recovery system. It takes a lot of energy to cool the milk from 38°C to 4°C within a short time frame. They use a large milk cooler to initially reduce the milk temperature and then use a heat exchanger to utilise the remaining heat from the milk to warm water. This hot water is then used in washing/sterilising of equipment. Graham believes the heat exchanger paid



*“We are committed to the environment.
We believe that modern farming can co-exist with nature”*

back in the first year of installation, whilst reducing total energy usage significantly.

“This is a very good thing to have on dairy farms-especially those with older parlours. I would strongly recommend it.”

Graham ensures that all failed lights are replaced with energy efficient bulbs, as well as a movement sensor, further increasing efficiency.

Precision Farming

Graham Birch is very passionate about precision farming. This farm uses precision farming which they believe is essential to increase efficiency on farm. They use techniques such as soil mapping, variable rate application, variable rate seeding, normalized difference vegetation index (NDVI) imagery and yield mapping. He said “It is a technical hurdle and is costly, but it has a very powerful payback and is better for the environment. In my opinion, precision farming is the single biggest thing that will mean farms can be sustainable in the future.”

“We are committed to the Environment. We believe that modern farming can co-exist with nature.”

“Our customers are very keen for us to farm in an environmentally sensitive way, and we feel happy to farm in a way that would make them proud to show people around and promote the benefits.”

4

10-15% OF DAIRY FARMERS IMPLEMENTING AT LEAST ONE FORM OF RENEWABLE ENERGY TECHNOLOGY

This target was met in 2013 as AHDB Dairy found that 28.9% of respondents to their survey had implemented some form of renewable energy¹³. The industry has continued to improve and expand on this target through methods such as solar PV panels, wind turbines and anaerobic digestion.

In 2014, one-third of farmers in England and Wales were generating renewable energy¹⁴. Of over 500 NFU members interviewed, dairy farmers made up almost 10% of those who responded. Based upon recent government and industry statistics (mid 2015), the NFU estimates that farmers own or host:

- Over half of UK solar power (4500 MW from nearly 600 solar farms, and up to 500 MW from over 10,000 PV rooftops)
- Half of anaerobic digestion capacity (about 100 installations)
- One-third of new renewable heat installations (over 3000 projects)
- Two-thirds (8200 megawatts) of British wind power, including up to 2000 small and medium turbines

Independent information from 16 dairy farms reporting renewables investments (covering farm sizes from 50 to 200 hectares) highlighted that over half had solar PV installed, from 10kW (small scale) to up to 250kW (large rooftop). Biomass heating and wind turbines (small to medium scale) were present on a quarter of farms.

“On the basis of the above evidence, it is reasonable to assume that dairy farmers have already met their 2015 target of 15% renewable energy uptake.” – Dr Jonathan Scurlock, Chief Renewable Energy Adviser, NFU.

On-farm biogas scheme extended to 2016

Administered by the recycling and waste organization WRAP, the fund offers grants of up to £10,000 to undertake a feasibility study and business plan investigating the potential of AD, and capital loans of up to £400,000. So far, 50 grants have been awarded and 42 feasibility studies and 15 business plans completed. As yet no loans have been awarded, but the fund will now continue to offer grants and loans until 31st March 2016, with sufficient budget for another 35 grants and up to 10 loans.

13 DairyCo effective use of resources survey (2012)

14 NFU, 2014 confidence survey

5

50% OF DAIRY FARMERS IMPLEMENTING NEW DEVELOPMENTS AND TECHNOLOGIES TO REDUCE EMISSIONS FROM AGRICULTURE

78% of dairy farmers are currently taking action to reduce the GHG emissions on their farm-this is the highest percentage out of all farming sectors¹⁵.

Better health status and animal welfare standards can reduce emissions along with optimised feed efficiency.

The industry is constantly improving in the following areas:

- Feed quality and digestibility
- Animal health and husbandry
- Manure management: collection, storage and utilisation
- Precision livestock farming

Feed and nutrition directly affects an animal's productivity and health status and can strongly influence GHG emissions per unit of product.

Grazing management, improving forage quality optimising the forage mix can all contribute to improved efficiency within the dairy system. This can substantially increase feed efficiency and production, resulting in reduced emissions.

Customised balanced feeding programmes in dairy cattle have been shown to be effective at increasing productivity and reducing methane emissions intensity (by between 15-20%) and also Nitrogen excretion by 20-30% as a result of reduced emissions from manure. Precision feeding has the greatest potential in high value systems that are already using technology on-farm.

15 Data set (DEFRA 2015) GHG mitigation Practices- England. Farm Practices Survey

6

DECLINING TREND IN SERIOUS POLLUTION INCIDENTS ON-FARM

Between 2013-2014, incidents caused by dairy farms decreased by 18% (44 incidents vs. 36)¹⁶.

Dairy farmers view manure and slurry as a valuable resource in the recycling of nutrients and organic matter back into the soil. Considerable cost savings can be made by utilising manures correctly; however they can also be a source of pollution on farms and therefore farmers should continue to use best practice when applying slurry and manure to farm land. In 2015 it was found that 90% of dairy farmers have taken up manure management plans. This in turn will contribute to the reduction of pollution and pollution accidents.

Unfortunately, the incidences of serious pollution are strongly influenced by weather conditions during that year. For example, in 2012 weather conditions were particularly poor and this may have contributed to the increase in pollution incidences in that year (54 vs. 36 incidents for 2012 and 2014). Overall, there has been a 23% drop in pollution incidents in the dairy sector between 2008 and 2014 and the dairy sector will continue to strive to reduce this number¹⁷.

16 Environment Agency Pollution Incidents Report September 2013: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/292843/LIT_8547_b70a6b.pdf

17 Environment Agency, Pollution Incidents 2014 evidence summary, July 2015. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/448728/LIT_10127.pdf

7

DAIRY FARMERS ENCOURAGED TO CALCULATE CARBON FOOTPRINT AND IMPLEMENT CARBON REDUCTION PLANS

Identifying the carbon footprint of a farm business is the first vital step in being able to measure the contribution that a farm is making to climate change. A carbon footprint calculation identifies the quantity and source of carbon dioxide, methane and nitrous oxide emitted from the farm, highlighting areas where improvements or changes can be made to reduce greenhouse gas emissions¹⁸.

In the 2012 AHDB Dairy effective use of resources survey, 38% of respondents had undergone a carbon footprint audit on their farm.

18 Soil Association- producer support, carbon footprinting on farms, information sheet. http://www.swarmhub.co.uk/downloads/pdf/carbon_project/Carbon_footprinting_on_farms.pdf

CASE STUDY

MARK ROACH, GROSVENOR FARM

Grosvenor Farm is a large mixed farm on the Eaton Estate near Chester, housing 1,400 dairy cows and producing around 48,000 litres of milk every day. This sits alongside a large arable enterprise of over 2,000 hectares of crops and 200 hectares of land used for environmental benefit and to enhance biodiversity.

It is clear that sustainability is at the heart of this farm business, with ambition to “have one of the lowest carbon footprints for milk and grain production in the UK” and to continue to “minimise environmental impact”. They have a strong focus on making the farm system efficient, whilst reducing waste and recycling animal manure, bedding and water.

Environmental Stewardship

The farm first created an environment conservation plan in 1983; measures have included tree planting, shelter belts, green corridors and pond creation. 28% of their land lies on a floodplain surrounding the River Dee. A vast number of wetland and farmland birds use this land as a nesting site, along with butterflies and dragon/damselflies.

Since the creation of the new dairy farm in November 2014, they have planted over 3,000 trees and 5 miles of hedge rows.

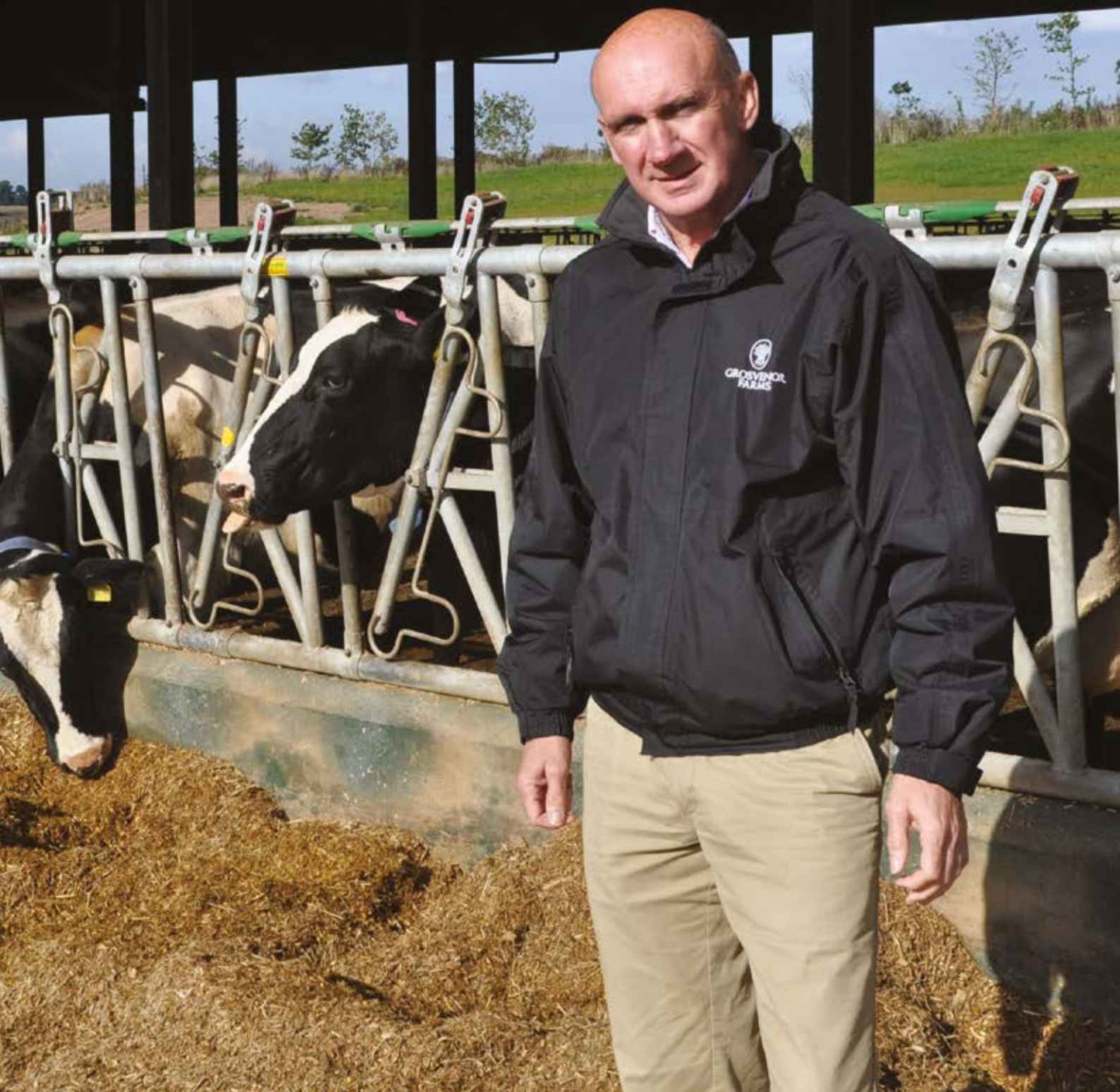
Renewable energy

Solar panels have been fitted to a south facing roof providing enough energy to power the entire dairy unit with a surplus still sent to the national grid. All of the lights used in the dairy unit are LED and are on a sensor, maximising efficiency.

Resource use/recycling

Water on the farm is used in a cycle process. It is extracted from a borehole and is used for cattle drinking water before being recycled for either sand separation that's used for bedding or cleaning the collecting yard. The bedding sand is cleaned and dried, with 85% being reused to minimise waste. Dirty water finally ends up at the reservoir where it is used as a liquid fertiliser. This minimises the need for artificial fertiliser and maintains healthy soils.

“Solar was a natural choice for us, it’s easy to install, no maintenance and we now generate more electricity than we use on our farm. We believe that being resource efficient is a priority for having a low carbon farm”





2020 DAIRY FARMER TARGETS

- 1** 30% reduction in GHG (including carbon dioxide, methane and nitrous oxide) emissions from dairy farms between 1990 and 2020
- 2** 70% of non-natural waste is recycled or recovered as standard practice
- 3** 90% uptake of water use efficiency measures
- 4** 40% of energy used on dairy farms is from renewable resources

1

20-30% GHG EMISSIONS REDUCTION FROM DAIRY FARMS BETWEEN 1990 AND 2020

The Department of Energy and Climate Change predict that “projected emissions from the agriculture sector are expected to decrease by 12% from 2010 levels by 2025.”¹⁹

A key objective of the ongoing inventory research is to produce a model that allows the agricultural industry to track emissions reduction progress by sector. In 2013, dairy farming in England emitted 8.03 Mt of CO₂ equivalents, down 35% on 1990 levels.

The ability to monitor these reductions more closely will help us with reporting against this target as we move closer to the 2020 deadline.

55% of dairy farmers rated GHG emissions as ‘important’ when making decisions about their livestock, crops and land²⁰. This was the highest percentage out of all the farming sectors. With commitment from farmers and support from the roadmap’s objectives, efficiency of production should continue to improve, which will ultimately lower emissions.

The Roadmap works alongside the Greenhouse Gas Action Plan (GHGAP). AHDB stated that in order to aid the GHGAP they will “use trusted routes of influence to help farmers/ growers and land managers carry out the GHGAP’s priority actions - by improving their use of energy and nutrients, their management of crops and livestock and reducing their own carbon footprint”. All of these items are addressed through targets in this Dairy Roadmap.

19 Department of Energy and Climate Change, Agriculture GHG Inventory summary Factsheet. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48414/1218-ghg-inventory-summary-factsheet-agriculture.pdf

20 NFU Briefing <http://www.nfuonline.com/assets/46020>

2

70% OF NON-NATURAL WASTE IS RECYCLED OR RECOVERED AS STANDARD PRACTICE

It is estimated that 35,000 tonnes of waste plastic packaging, sheeting, silage and crop films are produced by farms in England and Wales.

The amount of plastic waste recycled from agriculture between 2008 and 2015 has risen by 35% (17%-48% ktonnes)²¹. We can estimate that dairy makes up 13% of UK agriculture²². Therefore, of the 48% recycled, 27% comes from dairy farms.

Red Tractor standards require wastes are disposed of by registered waste carriers and that wastes are not burnt (with the exception of vegetation and untreated wood) which helps to lessen the impact and ensure correct treatments of non-natural wastes on the environment.

3

90% UPTAKE OF WATER EFFICIENCY METHODS

This target expands on the 70% target for 2015.

21 WRAP, <http://www.wrap.org.uk/sites/files/wrap/UK%20Plastics%20Waste.pdf>
22 DEFRA, Agriculture in the UK 2014.

4

40% OF ENERGY USED ON DAIRY FARMS IS FROM RENEWABLE SOURCES

This target is an expansion on the 10-15% target for 2015. With a European Union target to source 20% of the continent's energy from renewables by 2020 and a UK target to deliver 15% by 2020, renewables are encouraged at all levels and incentives are continuing to fund projects.

This target will challenge the industry but encourage farmers to diversify and act upon the interests in renewable energy.

In the summer of 2015 Nottingham Trent University, Forum for the Future and Farming Weekly, surveyed the attitudes of almost 700 UK farmers towards renewable energy. It reported that 38% of the respondents were already generating electricity from renewable sources. Further to this, the survey results made clear that 61% of those who didn't currently generate renewable electricity on their farms were likely to invest in renewable energy generation in the next 5 years²³.

23 Nottingham Trent University, http://www.ntu.ac.uk/apps/news/141798-15/Uptake_on_the_rise_but_renewable_energy_potential_still_not_being_met_say.aspx

“We are using strip tillage for maize to reduce energy use and improve soil conservation”





CASE STUDY

J. F TEMPLE & SON LTD. COPYS GREEN FARM, NORFOLK

Stephen Temple's farm is set in 230 hectares of grazing and arable land. He milks approximately 100 cows, with young stock and followers. The business is passionate about green energy and shares its achievements with the public via events such as Open Farm Sunday.

The farm uses carbon-neutral fuel wherever possible; they invested in an Anaerobic Digester (AD) in early 2009, which produces biogas. The biogas is methane rich, which they are currently utilising to generate up to 170kW of electricity. This energy is used for multiple purposes including heating for cheese making, hot water, the farm house and office whilst surplus energy is sent to the national grid and used on farm. There is also enough power produced from the AD plant to provide energy for 3 holiday cottages which they use as an additional enterprise. The biogas is produced from cattle manure, whey from cheese, fodder beet and maize silage.

A further benefit driven from the AD plant is the use of energy for heat to dry their grain, using a 200kW radiator to heat the incoming air. It reduces odours and potential for diffuse pollution whilst retaining fertiliser value.

The equipment used on this farm is selected on the basis of energy efficiency. For example, digestate produced from the biogas plant is applied with a trailing shoe tanker. Digestate is their most valuable fertiliser.



2025 DAIRY FARMER TARGETS

- 1** 90% of dairy farmers implementing technologies / practices to reduce emissions from agriculture
- 2** 85% of farmers using expert advice to optimise feed plans, which is directly linked to reduced emissions
- 3** Dairy farmers to enhance and promote action being taken to improve biodiversity
- 4** 95% uptake of water use efficiency methods



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CASE STUDY

WYKE FARMS, SOMERSET



Wyke Farms is one of the largest independent family-run cheese makers and milk processors in the UK producing over 13,000 tonnes of Cheddar each year. The Clothier family own four farms in Somerset, with 1500 milking cows plus followers between them. All of these are based within a three mile radius of the cheese-making Dairy. To fuel such a large cheese-making and processing operation the Clothiers also take milk from 80 dairy farms all within the South West.

In 2012 the company invested heavily in its 100% Green Initiative and built an Anaerobic Digester Plant that is made up of three 4,600 cubic metre digester vessels. It converts the unwanted biodegradable waste materials from the farm and cheese-making dairy into electrical and heat energy, which is used to power the cheese dairy and other farming operations.

In their drive towards a more sustainable future, Wyke Farms have commissioned a water re-usage plant within the cleaning for the cheese processing. Their aim is to re-use over 80% of their water; reducing the amount of water drawn from local boreholes.

They also use solar panels on their farm roof-tops to produce power which is used to cool the ice tanks in their milking parlours on the farms. Wyke Farms encourage and support supplying farmers who produce renewable energy for their own use.

Richard Clothier, Managing Director, Wyke Farms: "I have seen that our 100% Green commitment is yielding cost savings and efficiencies which in turn will make our business fit for the future, as well as improve the environment that we live in - many of these savings are only possible to achieve through sustainable practice."

"I have seen that our 100% Green commitment is yielding cost savings and efficiencies which in turn will make our business fit for the future"





DAIRY MANUFACTURER TARGETS 2015

This section of the report illustrates how dairy manufacturers are reducing their environmental impacts through the use of the Dairy Roadmap. Dairy Processors are working hard to ensure continual environmental improvements throughout all aspects of their business. This report displays processor achievements and performance against previous targets set for 2015 and 2020.

Future processor targets have also been set for 2025, which shows true commitment and aspiration to continue improvements and overcome environmental challenges.

2015 DAIRY MANUFACTURER TARGETS

- 1** Every large processing site will have in place an Environmental Management System (EMS) covering carbon, energy, waste, effluent, waste and packaging, with all permitted sites progressing to an externally verified EMS by 2015
- 2** Small sites to be investigating EMS
- 3** All major processing companies to be implementing a carbon management programme
- 4** A 20% relative reduction of water brought onto site
- 5** To achieve a 20% relative reduction in Chemical Oxygen Demand (COD) load in discharge effluent
- 6** To send zero ex-factory waste to landfill, where environmentally advantageous, for all large processing sites
- 7** Three Anaerobic Digestion (AD) plants at Dairy Roadmap sites
- 8** 30% recycled material in high density Polyethylene (HDPE) milk bottle
- 9** Remove all hydrofluorocarbons (HCFC'S) at all large processing sites
- 10** 80% of paper based cartons to be Forest Stewardship Council (FSC) labelled
- 11** A biodiversity strategy for processors to be written and to be in the process of implementation
- 12** All major processing companies to be part of the Freight Transport Association's (FTA) Logistics Carbon Reduction Scheme or to commit to equivalent fuel efficiency targets
- 13** All major Dairy Companies to have phased Euro4 engines

1

EVERY LARGE PROCESSING SITE WILL HAVE IN PLACE AN ENVIRONMENT MANAGEMENT SYSTEM (EMS) COVERING CARBON, ENERGY, WATER, EFFLUENT, WASTE AND PACKAGING, WITH ALL PERMITTED SITES PROGRESSING TO AN EXTERNALLY VERIFIED EMS BY 2015

An EMS allows an organisation to achieve its environmental aims through consistent measurement and management of its processes and operations.

Of the 43 large processing sites (those processing over 50 tonnes of milk a day) currently reporting into the Roadmap, 39 (91%) have an EMS in place.

Of the 38 environmentally permitted sites, 35 (90%) currently have an externally verified EMS with the vast majority of these being to ISO14001 standard²⁴.

2

SMALL SITES TO BE INVESTIGATING EMS

There are currently only six small sites reporting into the initiative; of these, two have Environmental Management Systems (EMS) in place, one of which is externally verified. Of the remaining four, only one is investigating EMS.

A key priority for the Roadmap going forward will be to engage with more of the smaller sites and encourage them to take part in the Roadmap and contribute towards its aims²⁴.

3

ALL MAJOR PROCESSING COMPANIES TO BE IMPLEMENTING A CARBON MANAGEMENT PROGRAMME

Within the context of the Dairy Roadmap a carbon management programme is defined as a comprehensive plan to quantify, record and reduce a company's carbon emissions. While not exclusively so, emission sources will principally be from electricity and fuel use at manufacturing sites, transport and logistics, and packaging. Details of the plan and progress against it should also be publically available either through an organisation's website or a published sustainability report.

Of the five major processing companies (those processing in excess of 200,000 tonnes per year) currently reporting into the Dairy Roadmap, all have programmes to monitor and reduce their carbon emissions, with information on the plan and progress publically available through sustainability reports or on company websites²⁴.

4

20% RELATIVE REDUCTION OF WATER BROUGHT ONTO SITE

Water use within the dairy manufacturing sector can be attributed primarily to cleaning equipment (65%). A smaller proportion of water is used for heating and cooling (4%) with a further 4% used in the pasteurisation and homogenisation process. While the manufacturing process only represents a relatively small portion of the total 'water footprint' of a dairy product it is still not an insignificant amount and the dairy processing sector strives to be as water efficient as possible.

Dairy Roadmap sites have reduced their relative water consumption by 15% since 2008 from 1.30 litres of water per tonne of milk processed to 1.11. This progress has been made through a number of measures including: reducing freshwater abstraction, water mapping projects to identify best practice, rainwater harvesting, water recovery through reverse osmosis, optimising the efficiency of CIP systems, vehicle wash water recycling, and low cost techniques such as employee engagement, triggers on hoses, dry floor cleaning and leak repair.

Although excellent progress has been made in this area, the predicted innovations in water re-use have not happened as early as expected therefore, progress in water efficiency has been slightly delayed. Added to this is the unprecedented increase in the number of products processors are producing due to the changing demands of consumers and retailers, which has resulted in an increased need for CIP and therefore water. It is for these reasons that the decision has been made to move this 2015 target into 2020 and to move the 30% 2020 target into 2025²⁵.

25 Dairy UK Environmental Benchmarking Exercise

5

20% RELATIVE REDUCTION IN CHEMICAL OXYGEN DEMAND (COD) LOAD IN DISCHARGED EFFLUENT

Chemical Oxygen Demand (COD) load is a measure of the amount of organic compounds in a sample of water. In the context of the Roadmap this measures the amount of compounds (principally milk) in the annual effluent discharge load of the Dairy Roadmap sites and gives a good indication of the quality of water discharged from dairies.

The latest data available shows that Dairy Roadmap sites have seen an increase in their relative COD loads of 7% since 2008: from 1.75kg per tonne of milk processed to 1.87. Reasons for this include an increase in throughput from 2008 (23%) coupled with smaller product runs which increases the amount of changeover, resulting in more cleaning between runs. High changeover is more common in cheese, butter and mixed dairy production, and typically these products produce higher effluent and COD levels than liquid milk production, with sites in this sector displaying a 6.5% reduction.

Dairy processors are working hard to reduce COD levels despite the increase in product changeover caused by consumer demand for more choice and contrasting retailer demands and recipes. For example Roddas have installed a reed bed system to further treat effluent post DAF unit treatment and are investigating other options to provide further treatment pre reed bed. Examples from other sites include:

- Using AD plants to recover energy from effluent
- Investigating new methods and techniques to avoid separator and bactofuge sludge from entering the system upstream of effluent treatment facilities
- Improving fat recovery systems, for example one site uses a system that removes butterfat from rinse waters for use as a material for biodiesel production
- Using turbidity alarms to provide real time detection of milk loss to factory drains
- Development of waste balances
- Optimisation of CIP systems to minimise product loss²⁵

6

ZERO EX-FACTORY WASTE TO LANDFILL, WHERE ENVIRONMENTALLY ADVANTAGEOUS, FOR ALL LARGE PROCESSING SITES

In today's world, and in order to achieve a more circular economy, waste should be looked at as a resource to be re-used, recycled, recovered and redistributed as much as possible; this makes both environmental and business sense.

Currently only 4% of ex-factory waste from large Dairy Roadmap sites is sent to landfill, this is compared to 32% in 2008. 14 large sites reported zero waste to landfill in 2014, a vast improvement from 2008 when no sites were doing this.

Progress has been made through improved segregation of mixed waste to maximise recycling rates, working with waste management contractors to identify routes for recyclables and alternative disposal for residual waste, employee engagement activities, greater use of incineration for residual waste to create energy from waste, more accurate reporting of waste figures, and redistribution of surplus food to food banks or redistribution companies such as Fareshare and Company Shop²⁵.

7

THREE ANAEROBIC DIGESTION (AD) PLANTS AT DAIRY ROADMAP SITES

Anaerobic digestion represents a significant opportunity for the dairy industry for both waste management and renewable energy production and is an excellent example of a closed loop system. By digesting trade effluent plus higher strength whey and permeate, AD plants feed energy back to the factory, cutting waste disposal and power costs. Bio-degradable fats and sugars are converted into biogas that can be used to produce renewable energy, or biomass digestate that can be sold and used as fertiliser and water. There are currently three AD sites in operation at Dairy Roadmap sites, one at BV dairy in Shaftesbury, one at Ballyrashane Dairy in Coleraine and one at the new Arla facility at Aylesbury.

CASE STUDY

ARLA AYLESBURY: ZERO CARBON DAIRY

The new Arla Aylesbury dairy, producing pure and filtered milk, is designed to be the best of the best, targeting zero carbon and zero waste when it is fully operational. The dairy is constructed in line with Arla's Environmental Strategy, to have the lowest carbon intensity of its kind, and will play a large role in Arla achieving their 2020 carbon reduction target.

The factory was designed to be a beacon of excellence, in all areas, providing a template for design for further projects and upgrades in the Arla Group – in construction, engineering, product quality, environmental solutions, safety and training opportunities. The Aylesbury model is now informing Arla's future projects, and the use of CHP, anaerobic digestion and water re-use is being planned for other sites internally.

Aylesbury has also been developed as a world class teaching facility, providing education through tours and a purpose built visitor's corridor and education centre

The road to Zero Carbon

Delivery of a zero carbon facility needed a step change in thinking, and it couldn't be done just using internal expertise. It needed everyone around the table to share ideas.

Combined heat and power is a key element of the zero carbon strategy. The energy centre produces 4MW of electricity, which is used to partially power the factory and 4.2MW of heat. Eleven per cent of the gas needed for the CHP engines comes from anaerobic digestion of effluent from the site, with the balance supplied by the gas network. The heat from the CHP engine is reused in the factory to minimise the carbon emissions of the process. Hot water is also supplied to steam generators to minimise the amount of energy needed to create steam. And the building services are optimised for efficiency, utilising free cooling and heating where possible. The plant has a large cooling load supplied by ammonia chillers. These chillers produce up to 8 megawatts of waste heat, which Arla is aiming to be used locally by other businesses as they locate to the Business Park.

Arla doesn't want to take the carbon neutral way out by buying electricity from a green supplier but is preparing to invest in close, off-site renewable energy, built specifically for Arla with an ongoing, direct contractual relationship with the supplier.

Our Neighbours and the local population

Arla have invested heavily to create a significant industrial development with minimal noise impact under incredibly challenging circumstances. To minimise the disruption to the local population from the beginning of the design process Arla Foods did the following:

- Opened and maintained channels of communication with local residents
- Developed a consistently strong relationship with local residents throughout the design and construction process
- Provided numerous accompanied site visits to local residents

Implementation of a stringent noise management plan has been paramount to the success of the project also, and where occasional issues have arisen, Arla have continued to offer accompanied site visits to allow residents to pinpoint possible sources of noise intrusion such that they may be addressed.

*The factory was designed to be a beacon
of excellence, in all areas, providing a
template for design for further projects and
upgrades in the Arla Group*



8

30% RECYCLED MATERIAL IN HIGH DENSITY POLYETHYLENE (HDPE) MILK BOTTLES

In 2009 in the UK we saw the introduction of the first milk bottle to include up to 15% Recycled High Density Polyethylene (HDPE) – a world first. Since then the industry has managed to achieve 31% recycled material in HDPE milk bottles.

A lot of hard work has been undertaken by all players in the market (retailers, dairies, blow moulders and recyclers) to make progress towards achieving this target. However, it is important to note that the 31% figure is based on 2014 data and that the current recycled HDPE percentage is likely to be substantially lower due to the reduction in capacity resulting from the closure of a major recycled HDPE producer earlier this year.

The major bottle manufacturers are also working hard to further reduce the overall weight of bottles and thereby further reduce the carbon and resource impact of milk bottles in the UK. There are also innovations occurring to increase the recyclability of packaging and to enhance packaging to increase the shelf life of products and reduce food waste²⁵.

9

REMOVE ALL HYDROCHLOROFLUOROCARBONS (HCFCs) AT ALL LARGE PROCESSING SITES

HCFCs are a group of commonly used refrigerants in the food and drink industry. Due to their ozone depleting properties, the European Commission has regulated to ensure that since 2010 no new equipment has been produced using HCFCs and that from 2015 no HCFCs will be able to refill existing equipment. The dairy processing sector aims to go one step further than this and ensure that all large sites are completely HCFC free by the end of 2015.

All of the Dairy Roadmap sites, large and small, have phased out HCFCs or plan to do so by the end of 2015. Most sites have replaced them with natural ammonia based refrigerants²⁴.

80% OF PAPER-BASED CARTONS TO BE FOREST STEWARDSHIP COUNCIL (FSC) LABELLED

Carton packaging makes up a relatively small proportion of the total packaging used for dairy products in the UK, but the industry is still committed to reducing its impact in this area where it can and will work with its suppliers to do so. This target aims to ensure that at least 80% of liquid carton packaging used in dairy carries the FSC label, showing that it was made with responsibly-sourced wood fibre from FSC-certified forests.

For the first six months of 2015, 74% of liquid cartons in the dairy category were FSC labelled. The data for the second six months is not yet available but it is likely that the full-year result will be higher. It is important that dairy processors continue to work together with the carton suppliers to increase FSC labelling.

Another noteworthy achievement is that 100% of the liquid packaging board produced in Europe is manufactured at FSC chain-of-custody certified mills, which ensures traceability²⁶.

A BIODIVERSITY STRATEGY FOR PROCESSORS TO BE WRITTEN AND TO BE IN THE PROCESS OF IMPLEMENTATION

Dairy UK has developed a biodiversity commitment for dairy processors. Although dairy farms represent the greatest opportunity to enhance biodiversity, dairy processors recognise that they can play a small but crucial role in enhancing biodiversity through the management of their processing sites. Taking into account the diversity of dairy site locations, the strategy aims to be flexible, with sites given the freedom to contribute in ways that suit their individual circumstances. However, the broad aim is to encourage biodiversity on sites where feasible.

The strategy commits dairy processing sites to:

- 1 Developing and implementing appropriate measures on site that make a contribution to enhancing biodiversity. These may include but not be limited to:**
 - Complementary planting using native plant species;
 - Erecting nesting facilities for birds where not contrary to food hygiene/safety requirements;
 - Allowing natural regeneration (long grass, wildflowers etc)
 - The removal of invasive plant species;
 - Avoidance of light pollution in wildlife sensitive corridors.
- 2 Alternatively, sites will endeavour to engage in biodiversity projects in their local communities. These may include but not be limited to:**
 - Working with local conservation groups/NGO's
 - Working with local schools (tree planting, education days etc)
 - Clean up operations in the local area
- 3 Moderate impacts on biodiversity where possible in the ways that sites use energy and water, dispose of waste and run their transport operations**

The strategy also offers advice for potential next steps that processing sites could take in monitoring and reporting the impact of these activities.

12

ALL MAJOR PROCESSING COMPANIES TO BE PART OF THE FREIGHT TRANSPORT ASSOCIATION'S (FTA) LOGISTICS CARBON REDUCTION SCHEME OR TO COMMIT TO EQUIVALENT FUEL EFFICIENCY TARGETS

The dairy processing sector believes that it is vitally important to take account of transport emissions within the Dairy Roadmap and to demonstrate that action is being taken to reduce impact in this area. The logistics Carbon Reduction Scheme is a voluntary industry-led approach to reducing carbon emissions from road freight by recording and reporting reductions in emissions. The overall aim is to reduce the intensity of CO₂ emissions by 8% by 2015.

Of the five major processing companies (those processing in excess of 200,000 tonnes per year) currently reporting into the Dairy Roadmap, four are members of the FTA scheme with three of the companies setting additional emissions reduction targets for logistics²⁴.

13

ALL MAJOR DAIRY COMPANIES TO HAVE PHASED OUT EURO4 ENGINES

The European Union defines acceptable limits for exhaust emissions for all new vehicles sold in the EU, with increasingly higher standards required in successive years following the regulation. The dairy processing sector is again looking to lead by example and will ensure all company-owned haulage vehicles use Euro5 engines or better by the end of 2015.

Euro4 engines have been phased out in two of the five large processing companies reporting to the Dairy Roadmap and the remaining three are looking to phase them out in the next year. In addition, one small site has phased out Euro4 engines and an additional two small processing sites are looking to phase them out in the next year²⁴.

2020 DAIRY MANUFACTURER TARGETS

- 1** To achieve a 15% improvement in energy efficiency
- 2** 30% relative reduction in water brought onto site
- 3** A 20% relative reduction in Chemical Oxygen Demand (COD) in pre-primary treatment effluent
- 4** To send zero ex-factory waste to landfill
- 5** 50% recycled material in HDPE milk bottles, or its carbon equivalent reduction
- 6** All tertiary packaging to be reusable or recyclable
- 7** 100% of paper based cartons to be FSC labelled

1

15% IMPROVEMENT IN ENERGY EFFICIENCY

At the start of 2013 the dairy processing sector negotiated an energy efficiency target with government of a 13.6% improvement between 2008 and 2020. This Dairy Roadmap target aims to go beyond this and requires an additional 1.4% reduction over the same period.

Data from the first Climate Change Agreement (CCA) target period (2013-2014) shows that the dairy sector has achieved a 15.8% improvement in energy efficiency, which is an excellent achievement²⁷.

2

20% RELATIVE REDUCTION OF WATER BROUGHT ONTO SITE

As reported above, Dairy Roadmap sites have reduced their relative water consumption by 15% since 2008 from 1.30 litres of water per tonne of milk processed to 1.11.

Although excellent progress has been made in this area, the predicted innovations in water re-use have not happened as early as expected. Therefore progress in water efficiency has been slightly delayed. Added to this is the unprecedented increase in the number of products processors are producing due to the changing demands of consumers and retailers, which has resulted in an increased need for CIP and therefore water. It is for these reasons that the decision has been made to move the 20% 2015 target into 2020 and to move the 30% 2020 target into 2025²⁵.

²⁷ Dairy Sector CCA data, Environment Agency

²⁵ Dairy UK Environmental Benchmarking Exercise



CASE STUDY

WATER TREATMENT FOR REUSE AT DAIRY CREST DAVIDSTOW

Good management of water resources is central to the production of tasty, nutritious and safe cheese and whey products at Davidstow.

One of the key drivers for Dairy Crest to improve its water management is the need for the nearly 400 dairy farmers who supply the site, to have a secure supply of water to produce milk. Creamery operations also require high quality fresh water within production processes, as well as for hygienic cleaning operations. Davidstow is strictly regulated on the quality of treated water it discharges to the River Inny, to ensure the chemical and ecological status of the receiving river. Furthermore the recent introduction of new facilities to produce whey and infant formula products at Davidstow, increases the site's water requirements. Efficient management of valuable water resources is therefore integral to our business strategy.

Water vapour produced during the evaporation of whey is already recovered to meet around 50% of site requirements and the Creamery uses a range of simple solutions to reduce freshwater abstraction, such as optimisation of automated cleaning systems, fixing leaks and using low water cleaning methods. These have contributed to an more than 20% reduction in relative fresh water imported to Davidstow since 2007/08.

In 2014/15 Dairy Crest made an extensive investment to allow them to further recover significant volumes of treated process water for reuse within Creamery operations. The project comprises of the following main stages:

- Nutrient rich process water is first treated to remove the phosphate which is present in the incoming raw milk. Process water is mixed with solubilised hydrated lime to chemically combine the phosphate to produce a 'cake'. The resultant cake is rich in both phosphate and calcium and is therefore well suited for reuse in agriculture - an excellent example of the circular economy in action.
- The downstream water treatment and recovery plant then employs a combination of biological, physical and chemical steps to produce high quality water suitable for reuse and a final effluent stream suitable for discharge to river.
- Next, Davidstow's new process water recovery plant includes multiple stages of tertiary treatment to produce a high quality water including membrane separation processes (Ultra Filtration followed by Reverse Osmosis) with the resultant permeate receiving subsequent ultra violet treatment and chlorination before use.

Around 1.7 million litres per day of high quality water will be produced by the recovery plant for reuse within Creamery operations. This is equivalent to the daily fresh water needs of around 11,000 people. The reuse of treated process water enables the manufacture of new products at Davidstow without the need to increase the quantity of imported freshwater.

Additionally, investment in enhanced waste water treatment and recovery enables the production of recovered water at less than 50% of the purchase price of municipal potable water.

3

20% RELATIVE REDUCTION IN CHEMICAL OXYGEN DEMAND (COD) IN PRE-PRIMARY TREATMENT EFFLUENT

This target is related to the COD target for 2015, but instead measures exclusively any reduction in the amount of compounds reaching the effluent plant, rather than those leaving the site. In this regard the target aims to specifically measure and reduce food wastage in processing.

At present it is not possible to give accurate figures for this target. A key challenge for this target is to ensure that as many companies are monitoring this measure as possible²⁵.

4

ZERO EX-FACTORY WASTE TO LANDFILL

This target goes beyond the 2015 target and aims to ensure that all Dairy Roadmap companies, no matter how small, are managing their waste effectively and efficiently by 2020. When small sites are included, only 5% of waste is sent to landfill, compared to 32% in 2008. 14 large sites and one small site are currently sending zero ex-factory waste to land. In comparison, in 2008 there were no sites doing this²⁵.

5

50% RECYCLED MATERIAL IN HDPE MILK BOTTLES, OR ITS CARBON EQUIVALENT REDUCTION

This target pushes the boundaries further from the 30% target in 2015. As reported previously, the industry has achieved 31% recycled material in HDPE milk bottles. However, as mentioned previously, it is important to note that the 31% figure is based on 2014 data and that the current recycled HDPE percentage is likely to be substantially lower due to reduction in capacity resulting from the closure of one of the major food grade recycled HDPE producers earlier this year.

Under the current circumstances meeting the recycled content aspect of this target is an impossible task. However, the dairy industry is committed to reducing the impact that packaging has on the environment and is still working hard, where it can, to increase the recycled HDPE content of milk bottles as well as encouraging innovations in all dairy packaging to increase recyclability, reduce packaging weight, and deliver product protection to reduce food waste. In 2025 we have broadened the scope of the packaging target to take into account and showcase the excellent work that is taking place in these areas and encourage further innovation in the future²⁵.

6

ALL TERTIARY PACKAGING TO BE REUSABLE OR RECYCLABLE

Tertiary packaging in this context is defined as the packaging used for bulk storage of products and typically includes, pallets, cardboard boxes and shrink wrap. The setting of a target to ensure all of this packaging is reusable or recyclable is a significant challenge for the sector and requires close cooperation with many partners and stakeholders from across the supply chain as well as government.

At present it is not possible to give accurate figures for this target. A key task for the Roadmap going forward is to make sure that companies are measuring this and working with suppliers to ensure that their tertiary packaging is reusable or recyclable.

7

100% OF PAPER-BASED CARTONS TO BE FSC LABELLED

This target aims to build upon the 80% target for 2015.

As reported above, for the first six months of 2015, 74% of liquid cartons in the dairy category were FSC labelled. The data for the second six months is not yet available but it is likely that the figure will be even higher. It is important that dairy processors continue to work together with the carton suppliers to increase FSC labelling.

Another noteworthy achievement is that 100% of the liquid packaging board produced in Europe is manufactured at FSC chain-of-custody certified mills, which ensures traceability²⁶.

CASE STUDY

FIRST MILK: HAVERFORDWEST CREAMERY

Haverfordwest creamery in Pembrokeshire produces award winning cheddar and a range of territorial cheeses. The creamery uses locally sourced milk from over 260 West Wales dairy farms who are all members of the First Milk cooperative that owns and operates several dairy processing plants throughout the UK. Haverfordwest creamery processes over 260 million litres of local milk and turns it into 28,000 tonnes of cheese.

In 2014 First Milk invested £5.4 million at the creamery to achieve significant reductions in nutrient/effluent outflow. The combined benefits of this project will help safeguard the creamery, the jobs it creates, the income of hundreds of local dairy farmers, as well as the cleanliness of local watercourses.

The plant has just passed its first anniversary and has hit its target to reduce the nutrient loading of the site's effluent by 30%. However, the wider benefits have been achieved via an innovative scheme which was developed between First Milk and the regulator Natural Resources Wales (NRW).

This involved 'offsetting' the lower level of nutrient loading coming from creamery's new effluent plant by reducing 'diffuse source' pollution from local First Milk dairy farms. The total amount of nutrient reduction achieved by the supplying farms is on target to exceed or at least equal the nutrients produced by the creamery, hence off-setting the output of the new effluent plant.

30 First Milk farm owners are implementing nutrient reduction measures that are off-setting the effluent plant's discharge. The cumulative impact of this farm sustainability programme will benefit local watercourses by reducing nutrient leaching by: 50.5 tonnes of nitrate, 1.73 tonnes of phosphate, and 527 tonnes of suspended solids.

In order for local dairy farmers to achieve the required reductions in farm nutrient leaching, First Milk provided best practice workshops, 1-2-1 consultancy advice, soil sampling and fertiliser calibration demonstrations. These events and interaction enable the farmers to choose the nutrient mitigation methods which best suits their farm.



2025 MANUFACTURER TARGETS

- 1 30% relative reduction in carbon related to energy use at processing sites**
This target goes beyond the 2020 energy efficiency target to look at the carbon associated with the energy use. The target aims to make companies continue to strive for energy efficiency but also try and reduce the carbon emissions associated with dairy processing, e.g. considering cleaner fuels. This target uses a 2008 base year.
- 2 30% relative reduction in net water brought onto site**
A decision was taken to move the 2020 water target into 2025. This is due to the predicted innovations in water re-use not happening as early as predicted, therefore although the industry is making significant progress in this area, it is slightly delayed. This target uses a 2008 base year.
- 3 30% reduction in food waste from site (based on solids) in line with the EU Fusions food waste definition**
This target builds upon the 2020 COD target and looks at the whole food waste picture. Basing the target on the EU Fusions definition encourages sites to divert surplus food to food banks and charities for human consumption, or to animal feed and the production of other by-products. A key challenge for this target will be to ensure that as many sites as possible are measuring food waste going forwards. This target uses a 2015 base year.
- 4 Dairy sites to exhibit an increase in biodiversity**
This target is an extension of the 2015 biodiversity target and encourages processing sites to start monitoring and measuring biodiversity improvement as a result of completing any actions implemented under the biodiversity strategy.
- 5 Dairy industry to develop and implement an industry standard for sustainability training**
Under this target the dairy industry will develop a guidance document for sustainability training within processing facilities with the aim to fully embed sustainability within company cultures.
- 6 Improve design for dairy packaging to maximise recycled content as appropriate, improve recyclability and deliver product protection to reduce food waste, while minimising carbon impact**
This target widens the scope of the previous packaging targets to encourage dairy processors to continue to invest in packaging innovation to improve recyclability, extend shelf life to reduce food waste, and to maximise recycled content where appropriate. The industry is also working towards quantifying the impact of packaging innovations on reducing food waste and carbon.



RETAIL COMMITMENTS

The dairy industry has become increasingly integrated over recent years and it is important that the supply chain continues to improve environmental sustainability together. These close working relationships have furthered progress against Dairy Roadmap targets in a number of ways, including:

- Carbon footprinting measures
- Farmer workshops on efficiency and environmental issues
- Improving biodiversity on farms



"At M&S we are committed to becoming the world's most sustainable retailer and our eco and ethical plan, Plan A, is central to the way that we run our business. An important part of this activity is our M&S Farming for the Future programme, which sees us working closely with our farmers to help them to adapt to the challenges they face through improved technical efficiency, environmental management and ethical practice, including animal welfare. As well as this we have developed an extensive education programme to encourage young people in the development of their careers within agriculture. We are, therefore, proud to support the ongoing aims and objectives of the Dairy Roadmap."



"The Co-operative is proud to support the aims and vision of the Dairy Roadmap. Through The Co-operative Dairy Group launched in August 2011, we are committed to supporting our dairy farmers and are working in partnership with them to improve the environmental impact of dairy processing."



"At Lidl we are committed to supporting British Dairy Farmers and their sustainability. Our suppliers work closely with their farmers to ensure the highest levels of efficiency and sustainability in order to minimise any environmental impact. We have a strong supply base, working with many family businesses, such as Graham's Dairies and Joseph Heler, with whom we work to add value to the dairy industry."



"At Waitrose we are committed to reducing the environment impacts of all our products and activities and are therefore proud to publicly support the ongoing aims and objectives of the Dairy Roadmap. Dairy foods represent a significant proportion of the products found on our shelves and taking action to reduce their impact is therefore a key priority for us and one we take most seriously."



"Protecting the environment whilst maintaining a steady supply of food is important to all of us and that's why Morrisons are proud to publicly support the aims and objectives of the Dairy Roadmap. Dairy products are a staple purchase for our 11.5 million customers and we want to do everything we can to help our farmer suppliers take steps to reduce the industry's carbon footprint."



“We believe that the work of the Dairy Roadmap Taskforce, and the objectives set out in the Roadmap can play an important role in ensuring the long term sustainability of the UK Dairy Industry. The Roadmap can also play a role in establishing the UK Dairy Industry as a global leader in environmental best practice. We are committed to playing our part in the Roadmap, supporting our suppliers’ move towards a cleaner and greener supply chain.”



“As a long-standing supporter of the British dairy industry, Aldi is proud to back the Dairy Roadmap’s aims and objectives. Aldi understands the importance of developing long term and sustainable relationships across the supply chain, and of proactive forward planning. The transparency and fairness with which we treat all our suppliers was recognised by the 2015 Groceries Code Adjudicator’s annual supplier survey, which named Aldi as the best performing grocery retailer for compliance. We look forward to continuing to work closely with dairy farmers and manufacturers in helping them meet their Dairy Roadmap targets.”



“ASDA is committed to the sustainability of the British dairy sector and the objectives of the Dairy Roadmap. Our business founders were dairy farmers and we value this heritage. The dairy sector represents one of the most successful and dynamic parts of the ASDA food offer.”

HOW DOES THE ROADMAP CONTRIBUTE TO THE DAIRY SUSTAINABILITY FRAMEWORK?

The dairy industry recognises the environmental and sustainability challenges related to its use of natural resources and the impacts that are generated as a result of the production of milk and dairy products.

Launched in October 2009, the Global Dairy Agenda for Action (GDAA) committed the dairy industry to actively improving its environmental sustainability and also took the opportunity to profile the efforts of the sector to reduce Greenhouse gas (GHG) emissions throughout the value chain⁶. In order to create a strategic approach to this, 11 criteria were set. The Dairy Roadmap directly relates to six of these criteria:

- **Greenhouse gas emissions**
GHG emissions across the full value chain are quantified and reduced through all economically viable mechanisms.
- **Soil Nutrients**
Nutrient application is managed to minimize impacts on water and air, while maintaining and enhancing soil quality.
- **Waste**
Waste generation is minimized and, where unavoidable, waste is reused and recycled.
- **Water**
Water availability, as well as water quality, is managed responsibly throughout the dairy value chain.
- **Soil**
Soil quality and retention is proactively managed and enhanced to ensure optimal productivity.
- **Biodiversity**
Direct and indirect biodiversity risks and opportunities are understood, and strategies to maintain or enhance it are established⁶.

The Dairy Roadmap is in full support of the Dairy Sustainability Framework and will continue to challenge itself to align with all 11 criteria. Soil, nutrients, GHG emissions, biodiversity, waste and water are all included within targets set in the Dairy Roadmap.

Both the Roadmap and the Dairy Sustainability Framework recognise that “sustainability is a journey and not a destination”. This Roadmap sets out future targets to continue improvements and keep the industry’s environmental performance moving forwards.

6 Dairy sustainability framework: <http://dairysustainabilityframework.org/dsf-membership/global-criteria/>



RED TRACTOR

Red Tractor was established in 2000 and has grown to become the UK's leading farm and quality food assurance scheme. The red tractor logo confirms that independent assessors have checked food or drink meets comprehensive standards, from farm to fork.

The Red Tractor can only be used on food that has been produced, packed, stored and transported to Red Tractor standards and there are currently 11,435 Dairy Assured farmers across the UK (2015 review).

The standards cover the following:

- Traceability
- Food Safety and Hygiene
- Animal Welfare
- Environmental Protection

Many of the standards required of farmers by Red Tractor are complemented by Dairy Roadmap targets and a selection of those has been integrated with this report²¹.

21 Red Tractor, http://www.assuredfood.co.uk/resources/000/965/981/DAIRY_standards_ONLINE.pdf



FUTURE PROSPECTS

This report has illustrated the achievements and improvements made by the Dairy Industry with regards to environmental targets over recent years. The efforts made have resulted in significant improvements and increased efficiency of businesses, which is an essential step towards sustainability. This is only the beginning. As an industry we are committed to making our environmental sustainability as robust and far reaching as possible.

The Dairy Roadmap recognises that it needs to continue to progress and challenge itself to reach future targets. Research and new technologies will progress, along with the skill and knowledge from those involved in the industry. This will push dairy to be increasingly environmentally responsible and set an example for the rest of agriculture.

DELIVERING THE DAIRY ROADMAP

The Dairy Roadmap is made up of two main bodies: the steering group and a wider task force.

The steering group holds responsibility for production of the Dairy Roadmap. The group includes members from AHDB Dairy, Dairy UK and the National Farmers Union. The main role of the steering group is to check and evaluate the targets set and reviewing what we are doing to align with global best practice.



THE TASKFORCE

The wider taskforce is made up of various industry stakeholders, including farmer representatives, retailers, dairy processors, Government and industry partners. The taskforce are committed to supporting the Dairy Roadmap and encouraging industry adoption at their respective levels in the supply chain.



