



CARBERY



Farm



Process



Customers

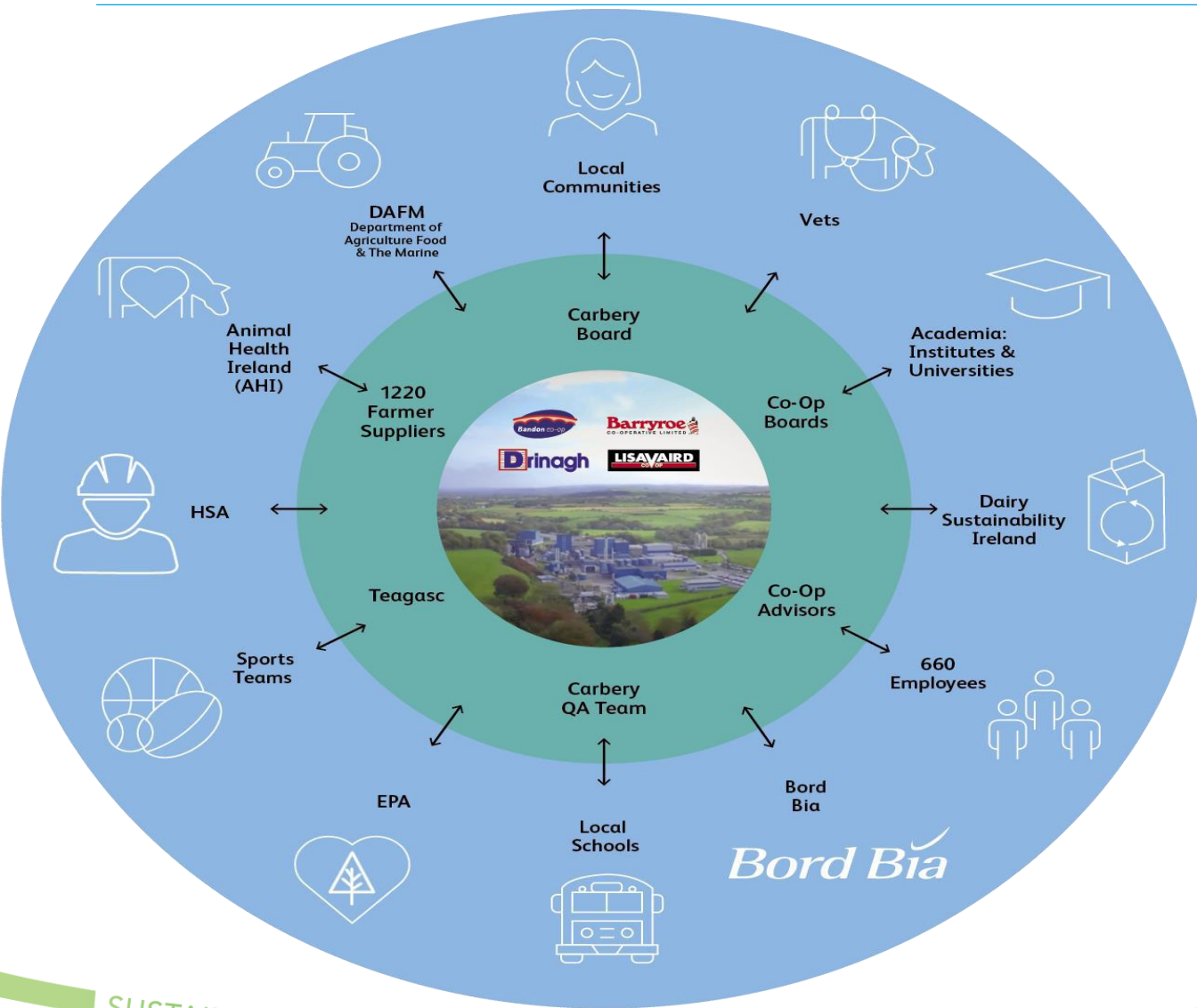
The role of Carbery in mainstreaming the Bioeconomy



SUSTAINABILITY



Carbery part of the Circular Economy in West Cork



Carbery Group Overview



Founded
54 Years
ago
(1965)



Sales of
€424m
(2018)



Selling in over
50 International
markets
(2017)

Carbery Group Global Operations



Carbery cheese innovation

Modern facility



Route to export market is a partnership with the Ornuu

- Targeting USA and Germany
- “Dubliner” distributed to speciality sector in US
- “Pilgrim’s Choice” is strong brand in the UK



Growth focus is on Added Value Cheeses

- Reduced fat and Half Fat Cheeses
- Mature Cheddars
- Dubliner
- Cheese with additives
- Healthy Cheeses (FHI)



Capacity for
230 tonnes
Per day

Largest producer of reduced fat cheese in Ireland and the UK



Carbery protein innovation

Bringing whey protein to life

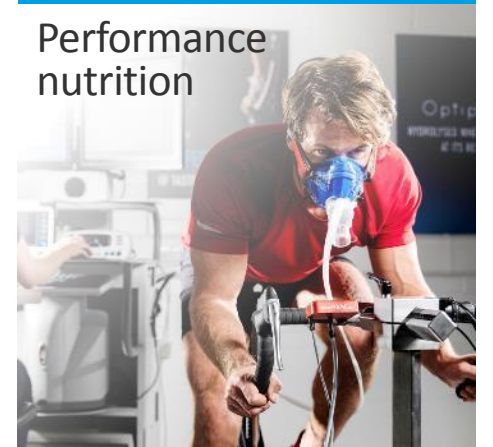
whey protein
**for whole
of life**



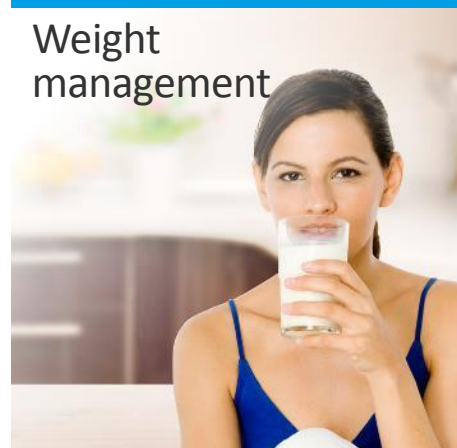
Infant
nutrition



Performance
nutrition



Weight
management



Active
aging



Synergy Flavour Innovation

Together with our customers, developing products that appeal to the constantly evolving/demanding consumer utilising;



CROSS CATEGORY FLAVOUR EXPERTISE

- Nutrition
- Beverage
- Dairy
- Savoury
- Bakery



EXTENSIVE PORTFOLIO

- Sweet & savoury flavours
- Extract and Essence portfolio
- Vanilla expertise
- Seasonings & blends
- Sugar reduction technology
- Dairy technology



SENSORY & ANALYTICAL SCIENCE

- Advanced analytical science
- Experienced sensory scientists & techniques:
 - Web based comprehensive software
 - Global sensory methods:
 - Descriptive analysis, Napping, TDS.



END TO END PRODUCT DEVELOPMENT

- Unique, high quality market ready concepts/prototypes across multiple formats

Our Sustainability Goal

Carbery to be recognised as a world-class sustainable business leader

What are the main challenges the cooperative faces now in terms of climate change

- As extreme weather events become more frequent, ensuring a constant supply of high quality grass for dairy cows will become a concern.

Mitigation Measure (MM): enhance soil fertility – Carbery Greener Dairy Farms (CGDF), grass measurement, better use of slurry – better grassland management

- Increased torrential rainfall events can have significant impact on water quality and grassland management

MM: Agricultural Sustainability Support and Advisory Programme (ASSAP), learnings from CGDF, growing trees in close proximity to alleviate flooding – Carbery Trees programme

Climate Change Challenges continued

- Potential for an increase in the range and occurrence of mycotoxins, particularly given the future climate on the island of Ireland is projected to be warmer and wetter.

MM: Carbery rolling out new health & welfare initiative pilot for CGDF with intention to get all farmers on board over coming years

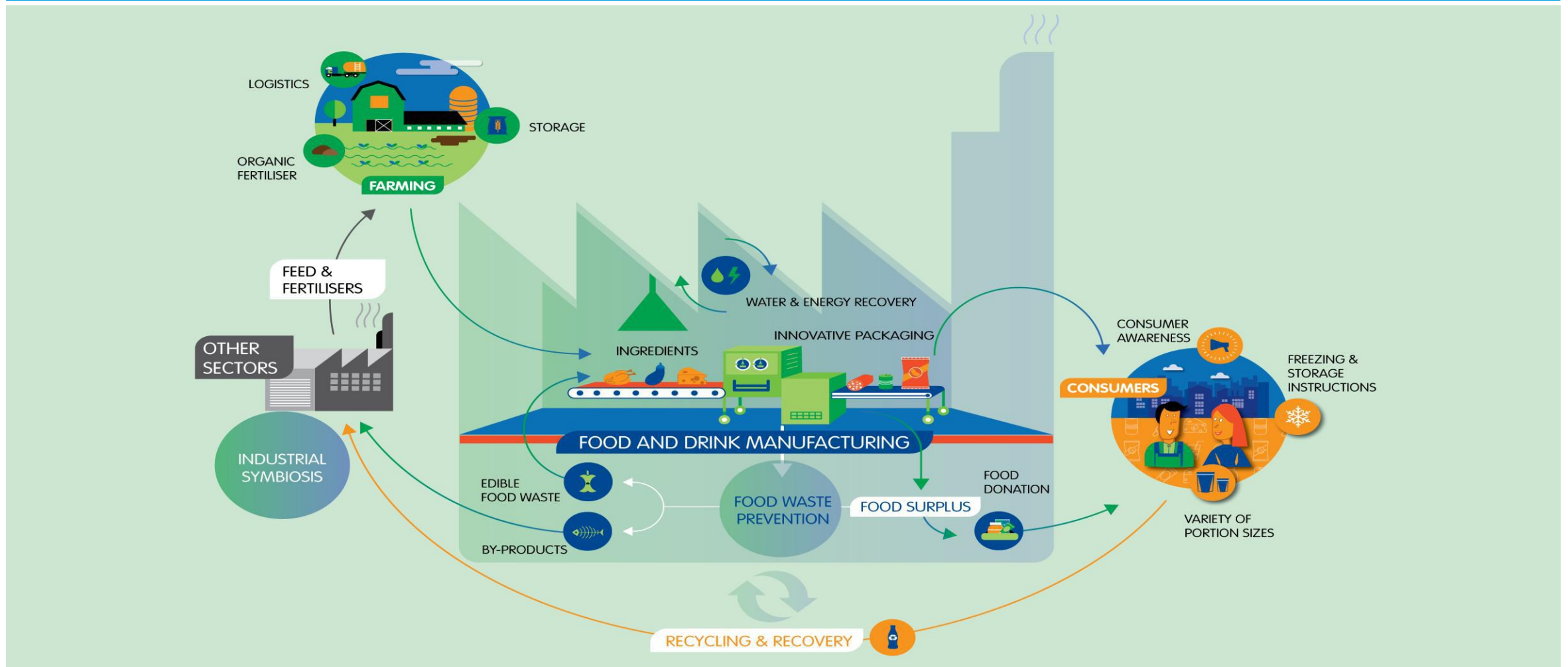
- Biodiversity loss

MM: Growing more trees - Carbery Trees, increase food for pollinators on farm through CGDF pilot

- Droughts such as 2018 have major impact

AM: West Cork Coops purchased fodder in Europe and offered it to farmers with significant credit terms (6 to 12 months)

Concept of circular and sustainable bioeconomy integratation



Carbery Greener Dairy Farms Programme 2012-2019

WHAT DID WE ACHIEVE?

2012 – Base Year

- Took soil samples and identified soil nutrient levels
- Completed Energy & Water Audits
- Measured inputs monthly
- Completed profit monitors
- Measured carbon footprint
- Biodiversity Mapping
- Provided Expert Advice via Farm Walks & Meetings
- Communicated results & improvements to all suppliers

2013-2017

- Reduced Carbon emissions
- Raised awareness on water use
- Increased profitability
- Reduced energy use
- Educated on the importance of sustainable dairy production

WHAT'S NEXT?

2018 onwards

Further 36 farmers joined the programme – bringing total to 62

Emphasis going forward on animal welfare and soil management

CGDF Digital Stories & Environmental Diploma

Circular Economy comes to life through Carbery farmers

- In 2017 launched a digital storytelling project around environmental sustainability with farmers in West Cork.

www.carbery.com/digitalstorytelling

- CGDF programme recognised by UCC through RPL mechanism. Farmers got conferred with Dip in Env. Science in Nov 2018



Carbery Tree Project

- The Carbery Tree Project was the first scheme of its kind in Ireland
- Every Farmer Member planted 20 x Native Irish Trees (Oak, Birch, Rowan and whitethorn) as a carbon offsetting measure, and also to increase biodiversity on farms.
- 2018 initiative also saw staff getting involved

1220
suppliers

45000
trees

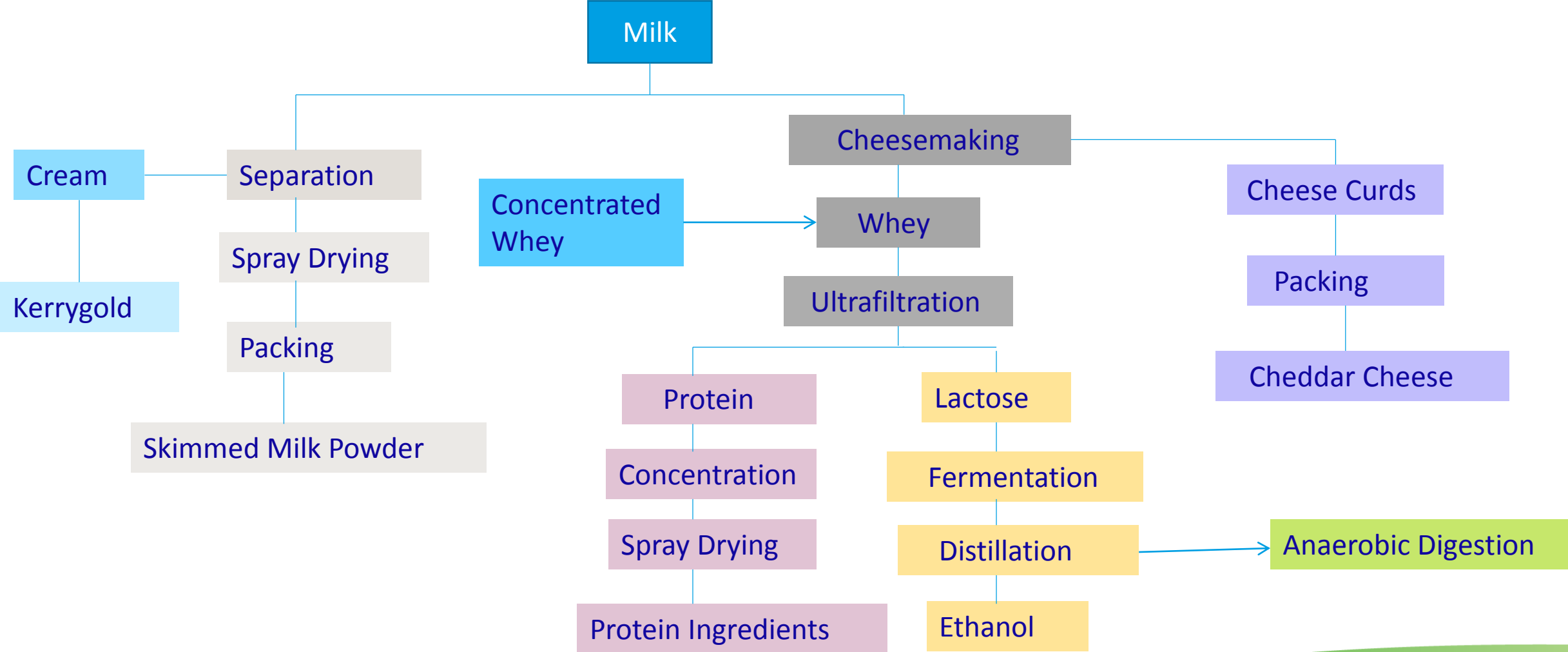
850MT
of Carbon
saved p.a.

A Benchmark of Carbery 2018 Milk Price against EU, US & NZ Milk prices

SUMMARY OF LTO MILK PRICE _DATED 6/3/19			
		<u>No.</u>	<u>12 months Dec 18 cent / Kg</u>
Granarolo (North)	IT	1	38.37
Valio	FI	2	35.73
West Cork / Carbery Food Ings			35.56
FrieslandCampina	NL	3	35.48
Royal A-ware	NL	4	35.07
Sodiaal (Pas de Calais)	FR	5	34.63
Danone (Pas de Calais)	FR	6	34.55
Lactalis (Pays de la Loire)	FR	7	33.97
Hochwald Milch eG	DE	8	33.72
Savencia (Basse Normandie)	FR	9	33.69
Arla Foods DK	DK	10	33.18
Kerry Agribusiness	IE	11	33.12
DMK Deutsches Milchkontor eG	DE	12	32.9
Dairygold	IE	13	32.76
Dairy Crest (Davidstow)	UK	14	32.65
Milcobel	BE	15	32.48
Müller(Leppersdorf)	DE	16	32.34
Glanbia	IE	17	32.07
AVERAGE LTO MILK PRICE ----->			33.91
Other Worldwide Prices Reported on the LTO using LTO standard			
Fonterra 3)	NZ		29.31
United States Class III 4)	US		31.49

Take Away –The Carbery milk price in 2018 was very strong relative to the strongest global milk prices.

Circular Economy at HQ in Ballineen





Working
with nature

Bord Bia Origin Green achievements

	EMISSIONS (per unit of equivalent tonnes of production)	WASTE (per unit product output)		WATER (per unit production)	ENERGY (per unit of equivalent tonnes of production)	RAW MATERIALS (per unit production)
		COD	LANDFILL			
2010-2016 TARGET	Reduce Carbon Emissions from base year 2010 by 14%	Reduce COD loading to effluent plant from base year 2010 by 50%	-7.5%	-9%	Reduce energy use from base year 2010 by 3.5%	<ul style="list-style-type: none"> Establish animal health & welfare initiatives on supplier farms Johnes control programme to over 250 participants by end of 2015.
2016 DATA	-22.7%	-56.4%	-19.2%	-12.9%	-22.2%	Both objectives achieved
2018 Data (comparisons to 2016)	-11%	0%	-14%	-10%	-12%	1 st objective achieved and on track to meet 2 nd target

Carbery's Sustainability Achievement



- Sustainability is core element of new group strategy, with stand alone 'sustainability' strategy
- Inaugural CSR report for the group published in the Autumn 2018
- Ballineen site procuring 100% renewable electricity as of June 2018
- On farm initiatives with emphasis on H&S, low carbon milk, animal health & welfare, developing 'sustainability' model farm nearby in Shinagh
- Becoming significant player in the Bioeconomy – joined BIC in 2017

Sustainability Plan



1. Continue to develop on-farm initiatives, emphasising low carbon milk, health & welfare and farm safety.
2. Achieve carbon neutral status across all sites by 2033.
3. Attain major water conservation across the group.
4. Zero waste to landfill across all sites by 2023.

Bioeconomy at Carbery

- Carbery pioneered the operation of an industrial-scale whey-to-ethanol plant in 1978.
- 'Carbery Process later adopted in NZ and by Muller in Germany
- In Irish context it equates to avoided CO2 emissions of 16,321 tonnes of CO2 compared to standard petrol - very beneficial impact on Ireland meeting its 2020 transport targets
- Plant currently produces about 12 million litres of bioethanol/annum
- Significant GHG emissions saving – 85% less carbon intensive than petrol



Grass Biorefinery Project



- Adding value to grass through extra side streams
- Potential for farmers to earn extra income from their grass
- Potential to cut silage all year round – no effluent issues
- Potential environmental benefits will enhance image of dairy industry
- If successful would mean Ireland less dependant on imported protein
- Ultimately make West Cork/rural Ireland more sustainable and resilient

GRASSA! provides more efficient agriculture: 50% increase in animal protein per ha

MOWING AND TRADITIONAL ENSILING
15% LOSS (STAYS BEHIND ON THE PASTURE)



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NO DISCHARGE OF
PHOSPHATE

ONLY MOW AND SHAKE IN DRY WEATHER | PHOSPHATE IS CONCENTRATED (ON DRYING)

GRASSA!
NO LOSSES



MOW



GRASSA! REFINING

WEATHER INDEPENDENT

WITH FIBERS
AND RESISTANT



LOWIN PHOSPHATE

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