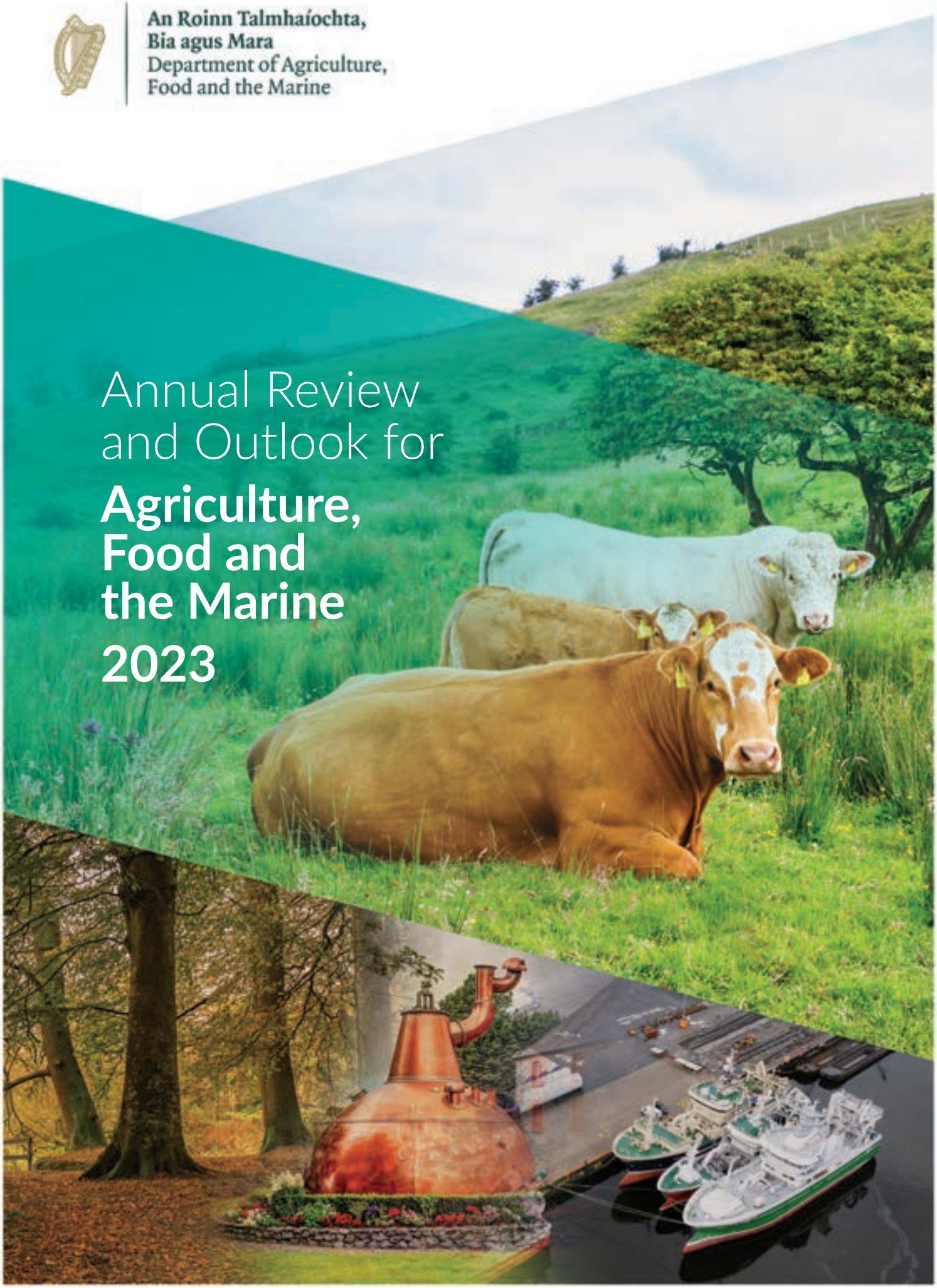
An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Annual Review and Outlook for **Agriculture, Food and the Marine 2023**



An Roinn Talmhaíochta,
Bia agus Mara
Department of Agriculture,
Food and the Marine

Annual Review and Outlook for **Agriculture, Food and the Marine** 2023

Economics and Planning Division

Email Address:
EconomicsandPlanning@agriculture.gov.ie

Postal Address:
Economics and Planning Division
Floor 6 Centre, Agriculture House
Kildare Street
Dublin 2
DO2 WK12.

Foreword

by Minister Charlie McConalogue T.D.

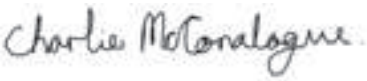
I am pleased to present the Annual Review and Outlook for Agriculture, Food and the Marine 2023, the flagship economic publication of my Department. This is an invaluable source of information and statistical analysis relating to the agri-food sector in Ireland, providing a detailed overview of the sector and an outlook for the future.

Agrifood exports continued to grow in 2022, increasing to almost €19 billion, accounting for 9% of all the goods exported from Ireland. The Irish agri-food sector is globally orientated, with approximately 90% of Irish beef, sheepmeat and dairy produce exported each year. In 2022 we exported more than one billion euros in value of each of the following: fresh or chilled Irish beef, natural butter, cheese and Irish whiskey. These record exports are dependent on the almost 165,000 people employed in the sector across 135,000 farms, 2,000 fishing vessels & aquaculture sites and some 2,000 food production and beverage enterprises. The sector is responsible for 4.5 million hectares of agricultural land and 808,848 hectares of forestry or some 76% of the total land in the State.

The agrifood sector has faced numerous challenges in recent years, including the challenges posed by Brexit, COVID-19 and the illegal invasion of Ukraine by Russia. These have resulted in a greatly changed trading environment with our closest neighbour, the closure of the food service sector for much of 2020 and 2021, and a rapid rise in input costs over the past 18 months. The sector has demonstrated its adaptability and resilience in the face of these challenges, continuing to deliver safe and nutritious food for Irish and international markets. Despite these challenges, the average family farm income has increased each year for the past four years, although the levels of this increase varied considerably between the farm sectors.

My Department has made significant progress in implementing Food Vision 2030, our shared strategy for the agri-food sector. The Food Vision 2030 Dairy Group and Beef & Sheep Group both submitted their final reports in 2022, detailing a list of recommended actions for the sustainable development of their respective sectors, with the Food Vision Tillage Group due to report shortly. These reports represent a broad consensus on the key actions that are required in the context of the Climate Act 2021 and the specific ceiling set for emissions from the agriculture sector in July 2022. We can only progress our sustainability goals, environmental, economic and social, with ongoing collaboration and dialogue, involving all of the stakeholders.

Having a reliable evidence base is essential for policy formulation, planning and implementation. This is more important than ever as we continue paving the way in the new era of sustainable development of the agri-food sector. I am sure that the data and information contained within this Annual Review and Outlook will be of great use to the sector over the next year.

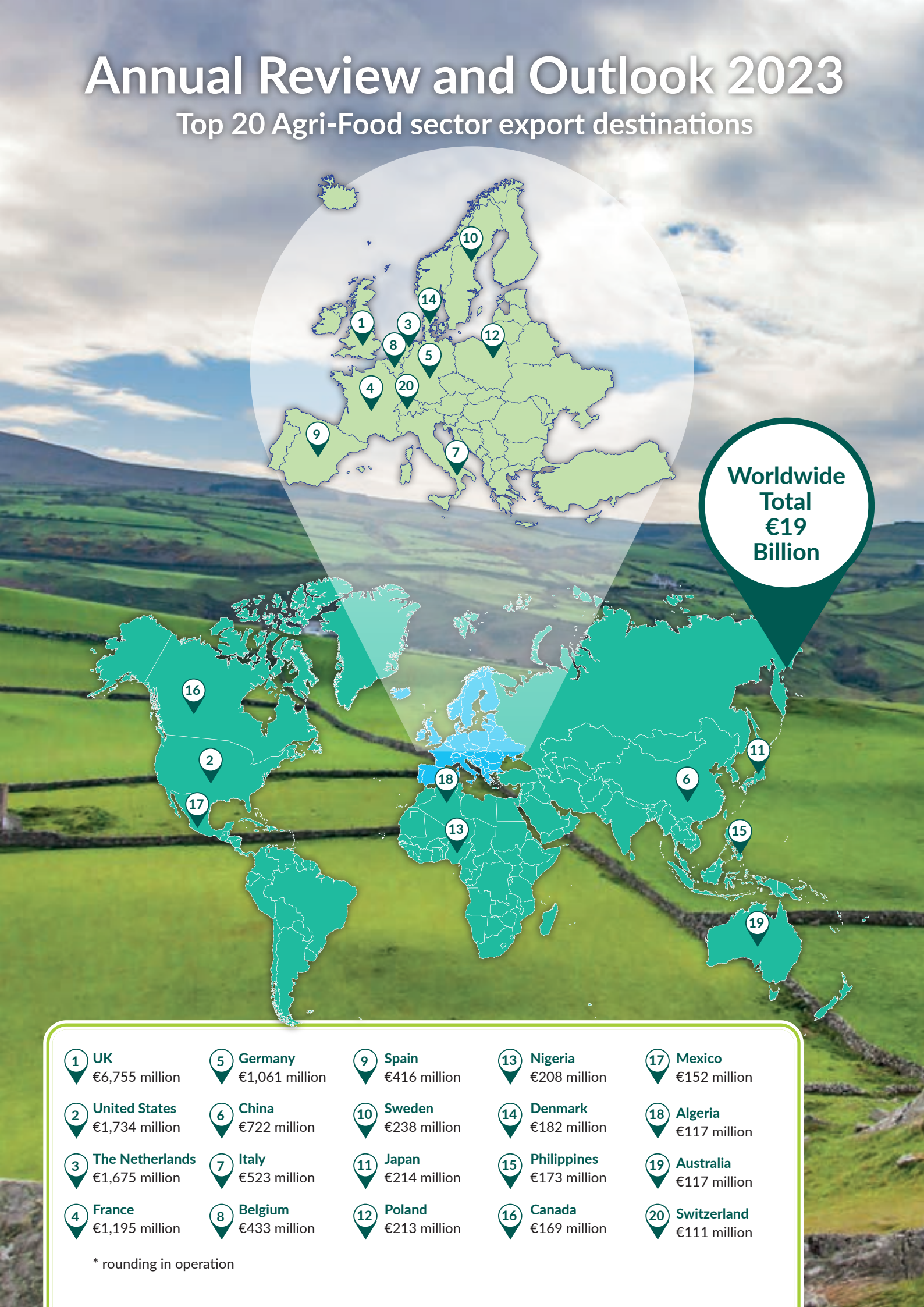


Charlie McConalogue T.D.
Minister for Agriculture, Food and the Marine

Contents

Annual Review and Outlook 2023

Top 20 Agri-Food sector export destinations



1 **UK** €6,755 million	5 **Germany** €1,061 million	9 **Spain** €416 million	13 **Nigeria** €208 million	17 **Mexico** €152 million
2 **United States** €1,734 million	6 **China** €722 million	10 **Sweden** €238 million	14 **Denmark** €182 million	18 **Algeria** €117 million
3 **The Netherlands** €1,675 million	7 **Italy** €523 million	11 **Japan** €214 million	15 **Philippines** €173 million	19 **Australia** €117 million
4 **France** €1,195 million	8 **Belgium** €433 million	12 **Poland** €213 million	16 **Canada** €169 million	20 **Switzerland** €111 million

* rounding in operation


Ireland's agri-food exports were a record €19 billion in 2022, a 22% increase on 2021.
Agriculture GHG emissions decreased in 2022 by 1.2% or 0.29 Mt CO2eq, compared to 2021.
Ireland exported more than €1 billion each of fresh or chilled beef, butter, cheese and whiskey in 2022.
The value of Irish seafood exports has increased for the second year in a row, growing by €33 million, from €609 million to €642 million in 2022.
Average family farm income for 2022 was €45,809, a record year, up by 32% on 2021.
An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine
In 2022, €70 million was spent by DAFM on forest activities including afforestation, maintenance grants, premium payments, and forest roads.
Ireland is currently the 8th largest dairy exporter in the world, exporting 90% of our dairy products.
The estimated value of horticulture output at farm-gate in 2022 was €531 million.
Beef worth over €3.05 billion and 492,000 tonnes, was exported in 2022.
The cereals sector in Ireland utilises around 6% of total agricultural area.

CHAPTER 1

Agri-Food Sector and the Economy

The operating surplus in agriculture has doubled in the last 10 years to

€4.7 billion

Ireland's agri-food exports were a record

€19 billion

in 2022, a 22% increase on 2021.

Ireland exported more than

€1 billion

each of beef, butter, cheese and whiskey in 2022.

1.1 Overview

Trading in food, animal skins and furs has been taking place for centuries. Most countries start trading with these basic commodities and over time as their basic needs are fulfilled, they began to trade in other goods. The agri-food sector in Ireland is the oldest and largest indigenous exporting sector and its products are traded from every county in Ireland to 180 countries around the globe. The agri-food sector includes primary production in farming, fishing and forestry, and the processing and manufacture of food, beverages and wood products. In 2022 the sector exported goods valued at a record €18.98 billion, accounting for 9% of all the merchandised goods exported from Ireland. The Irish agri-food sector is globally orientated, with approximately 90% of Irish beef, sheepmeat and dairy produce exported each year. In 2022 we exported more than one billion euros in value of each of the following: fresh or chilled Irish beef, natural butter, cheese and Irish whiskey.

These record exports are dependent on the almost 165,000 people employed in the sector across 135,000 farms, 2,000 fishing vessels & aquaculture sites and some 2,000 food production and beverage enterprises. The sector is responsible for 4.5 million hectares of agricultural land and 808,848 hectares of forestry or some 76% of the total land in the State.

In Ireland, agri-food is an integral part of the economy and society, and especially so for our rural and coastal communities. Beyond direct employment, the sector plays a key role in the wider rural and local economy, with estimates for output multipliers ranging from around 2.5 for beef, 2.0 for dairy and food processing and 1.75 for seafood. This compares with an average output multiplier of 1.4 for the rest of the economy and 1.2 for foreign owned firms. The agri-food sector contributes strongly to the Irish economy, for example, food sector clients of Enterprise Ireland spent €15.6 billion in the Irish economy in 2021 accounting for 50% of total spend by all of their clients.

The sector produces food and ingredients with a global reputation for quality and safety, with a livestock sector built on an enviable grass-based production system. Global demand for high-quality food is increasing with population, urbanisation and affluence. The Irish agri-food sector is well placed to play a role in meeting this demand. Food Vision 2030, the strategy developed by representatives of the entire sector, sets out a vision for Ireland to be a world leader in sustainable food systems over the coming years.

The agri-food sector has faced many significant challenges over the past few years caused by Brexit, COVID-19 and the illegal invasion of Ukraine by Russia. These events have resulted in the food services sector closing for many months during 2020 and 2021, pushed gas and oil prices to record highs, and has severely disrupted the world trade in wheat, fertilisers and sunflowers. Yet the sector has remained resilient and continued to ensure a safe supply of food to the shelves in our supermarkets. Irish farmers faced increases in costs of over 30% in feeding stuffs, 45% increase in energy costs and almost 100% increase in fertiliser costs during 2022, with these three items accounting for 55% of their total costs. Cattle, sheep and pig farms saw their Family Farm Income fall in 2022 while tillage and dairy farms saw their incomes rise. The second quarter of 2023 has seen inflation falling somewhat but the costs to farmers are still significantly higher than they were in early 2021. Brexit, which has impacted the agri-food trade more than most other sectors into and out of the United Kingdom since late 2016, is becoming more settled although this will again be tested in early 2024 when new United Kingdom import requirements for agri-food imports will apply.

The past four or five years have raised a number of challenges for the agri-food sector and it has risen to the challenge, showing its resilience as it continues to provide safe, nutritious, wholesome food and drink not just in Ireland but to people all around the world.

1.2 Economic Outlook

The year 2022 will be remembered for the illegal invasion of Ukraine by Russia but also for the highest inflation in 38 years. The consumer price increase rose by 9.2% in the 12 months to October 2022, the highest level since June 1984 when it was 9.7%. Between April 2012 and June 2021 inflation had remained below the benchmark 2% rate, but it then began to rise quickly and between June and November 2022, when it was close to or above 9%, before it began to fall slowly. Inflation in housing, water, electricity, gas and other fuels reached around 27% between October 2022 and January 2023, while food and non-alcoholic beverage prices, which rose slower than general inflation initially, rose by over 13% between February and April 2023 before falling back slowly.

Rising oil and natural gas prices in mid to late 2021 fuelled the beginning of a rise in inflation. However, the events of February 2022 which witnessed the Russian illegal invasion of Ukraine pushed the price of natural gas to an all-time high and oil to the highest price for more than a decade in late Spring and early Summer of 2022. The high natural gas prices, on which fertiliser production requires, saw fertiliser prices rise by over 200%. Feed prices were also driven upwards as Russian and Ukrainian exports account for about 12% of total calories traded in the world. The two countries are among the top five global exporters for many important cereals and oilseeds, including wheat, barley, sunflowers and maize. Ukraine is also an important source of sunflower seed oil, supplying about 50% of the global market, while Russia is a major producer and exporter of potash, phosphate and nitrogen-containing fertilisers. The EU Member States agreed to impose a number of different sanctions on Russia, including a maximum price it would pay Russia for oil and they also agreed to significantly reduce their dependence on Russia for natural gas.

These events following on quickly after COVID-19 and the trade disruption caused by Brexit, and added to the pressures on the agri-food sector and tested its resilience. In March 2022, the FAO Food Price Index (FFPI) reached its highest level on record since 1990, at 159.7 points. During 2022 the average FFPI was 46% higher than it was in 2020 even though it was falling gradually from April 2022 onwards. In the year to March 2023, it had fallen each month by about 20% in total. While world inflation and food prices are easing, they are forecast to remain elevated over the short term compared to the previous decade.

Government's Stability Programme Update

In April 2023 the Department of Finance issued the Government's Stability Programme Update in which they stated that the Irish economic data have surprised on the upside and the near-term outlook is somewhat better than anticipated at the time when Budget 2023 was announced in Autumn 2022. However, they warned that future prospects remain highly uncertain, against a fragile global economic backdrop and three factors have had a significant impact on economic activity, namely the Russian invasion of Ukraine, the rise in inflation triggered by a shock in energy prices and the rise in interest rates by many central banks around the world.

The resilience displayed by the Irish economy is most apparent in the labour market, where the rate of unemployment is close to historic lows and the number of people at work is at its highest ever level. The very high levels of inflation seen in 2022 have reduced somewhat in early 2023 with all indicators pointing to a further reduction during 2023 and into 2024.

The data in table 1.1 reflects the Department of Finance's position in April 2023. While 2022 had seen strong growth in both GDP and GNI*, both are expected to see more modest growth in 2023 and 2024. Modified Domestic Demand, which is arguably the most accurate indicator of domestic economic activity in Ireland was 8.2% in 2022, but it is also expected to weaken this year with a slight recovery in 2024 and 2025. Unemployment took a big hit in 2021, mainly due to COVID-19, increasing from 5% in 2019 to 15.9% in 2021. Strong employment numbers in 2022 saw this drop to close to full employment at 4.5%, with this expected to drop marginally lower in 2023.

Table 1.1 *Main economic and fiscal variables, per cent change (unless stated)*

	2022	2023 Forecast	2024 Forecast	2025 Forecast
Economic Activity				
Real GDP	12.0	5.6	4.1	4.9
Real GNP	6.6	5.1	3.6	4.4
Modified domestic demand	8.2	2.1	2.5	3.2
Real GNI*	9.3	1.6	2.1	2.5
Prices				
HICP	8.1	4.9	2.5	2.0
Core HICP	5.0	4.4	3.2	2.6
Balance of Payments				
Trade balance (per cent of GDP)	37.3	39.6	40.1	40.9
Current account (per cent of GDP)	8.8	11.2	11.6	12.3
Labour Market				
Total Employment ('000)	2,547	2,588	2,624	2,662
Employment	6.6	1.6	1.4	1.5
Unemployment (per cent)	4.5	4.4	4.5	4.5

Source: *Department of Finance Ireland's Stability Programme, April 2023 Update*

ESRI Summer Quarterly Economic Commentary

The Economic and Social Research Institute (ERSI) released their Summer Quarterly Economic Commentary, in late June 2023. The commentary noted that economic headwinds such as rising interest rates, slower than expected global trade and persistent inflation are clouding the international outlook but the domestic economy is growing robustly. It did also warn that the emergence of capacity constraints, particularly in the labour and housing markets may have implications for future growth.

The ESRI expect GDP to grow by 0.1% this year, and 3.5% in 2024, but believe the economy as measured by modified domestic demand (MDD) will increase by 3.5% this year and 4.0% in 2024. The greater pace of economic activity in 2024 is mainly attributable to the expected lower rate of inflation.

Central Bank of Ireland Quarterly Bulletin

In June 2023, the Central Bank of Ireland outlined that with global energy and food prices continuing to ease, domestic factors are beginning to play a more important role in the inflation outlook. Growth in the domestic economy in 2023 is expected to be slightly stronger than previously anticipated. Various indicators, particularly from the labour market, point to the economy operating at capacity. The tightening of monetary policy is beginning to feed through the economy and will contribute to dampening demand and economy-wide price pressures. In this environment, it will be important that fiscal policy charts a careful course that does not exacerbate the imbalance between demand and supply conditions across the economy.

EU's Spring 2023 Economic Forecast

The EU's Spring 2023 Economic Forecast, released in May 2023, projected that the outlook for the EU economy continues to show resilience in a challenging global context. Lower energy prices, abating supply constraints and a strong labour market supported moderate growth in the first quarter of 2023, dispelling fears of a recession. This better-than-expected start to the year lifted the growth outlook for the EU economy to 1.0% in 2023 and 1.7% in 2024. The forecast states that the European economy has managed to contain the adverse impact of Russia's war of aggression against Ukraine, weathering the energy crisis thanks to a rapid diversification of supply and a sizeable fall in gas consumption. Markedly lower energy prices are working their way through the economy, reducing firms' production costs.

As inflation remains high, financing conditions are set to tighten further. Though the ECB and other EU central banks are expected to be nearing the end of the interest rate hiking cycle, the recent turbulence in the financial sector is likely to add pressure to the cost and ease of accessing credit. As for inflation, the headline index continued to decline in the first quarter of 2023, amid sharp deceleration of energy prices, but core inflation firmed, pointing to persistence of price pressures. For the second quarter, survey indicators suggest continued expansion, with services clearly outperforming the manufacturing sector and consumer confidence continuing its recovery from last autumn's historical low.

The forecast indicated that GDP in Ireland is projected to remain on a solid growth path of 5.5% in 2023 and 5.0% in 2024. Net exports are the main driver of economic activity, which is also supported by resilient private consumption. Inflation is estimated to have peaked at 8.1% in 2022 and is set to moderate gradually throughout 2023 to reach 2.6% in 2024. The budget surplus is projected to increase further in 2023 and 2024.

OECD Economic Outlook, June 2023

The OECD Economic Outlook, published in June 2023 stated that the global economy is showing signs of improvement, but the upturn remains weak, amid significant downside risks. Lower energy prices are helping to bring down headline inflation and ease strains on household budgets, and the earlier than expected reopening of China has provided a boost to global activity. However, core inflation is proving persistent and the impact of higher interest rates is increasingly being felt across the economy.

The OECD projected that global GDP growth in 2023 to be 2.7%, the lowest annual rate since the global financial crisis, with the exception of the 2020 pandemic period. A modest improvement to 2.9% is foreseen for 2024. Annual OECD GDP growth is projected to be below trend in both 2023 and 2024, although it will gradually pick up through 2024 as inflation moderates and real incomes strengthen.

Headline inflation has fallen in most economies in recent months due to the downturn in energy prices, even though food and services prices have continued to rise rapidly. Core inflation remains stubbornly high. A combination of high inflation and modest wage increases led to falling real wages in 2022. Many governments rolled out extensive support to cushion the effects of high energy and food prices on households. Over the course of 2023, real wages are projected to stop declining in most OECD countries.

The OECD's outlook for Ireland outlined that after two years of double-digit growth, GDP is set to decelerate, with growth projected at 4.4% in 2023 and 3.7% in 2024, as support from exports in multinational-dominated sectors gradually eases. Despite persistent inflation, consumer spending will be relatively strong in 2023, underpinned by significant employment growth and the summer tourist season. Confidence improvements will gradually strengthen business orders and enhance firms' incentives to invest. Modified domestic demand, which removes some distortions due to the high share of multinational firms, will grow by 1.8% in 2023, and 3.0% in 2024.

1.3 EU Agricultural Economic Outlook

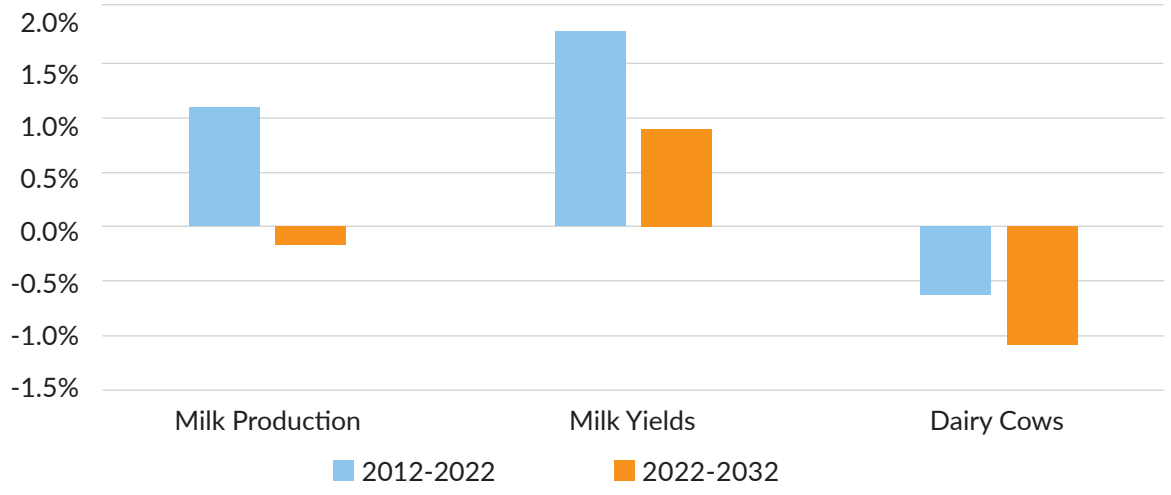
The EU Agricultural Outlook for Markets, Income And Environment 2022 – 2032 presents the medium-term outlook for EU agricultural markets, income and environment until 2032. It is based on a set of assumptions regarding macroeconomic conditions, the fixed agricultural and trade policy environment, and international market developments. These assumptions imply relatively smooth market developments when, in reality, markets tend to be much more volatile. Therefore, the outlook is not a forecast. More precisely, the projections correspond to the average trends agricultural markets are expected to follow in a given macroeconomic environment, if policies were to remain unchanged.

Published in December 2022, it outlined that the annual report was prepared in a significantly changing environment. In early 2022, the post-COVID-19 recovery led to supply and trade disruptions and increasing commodity prices and input costs. New severe shocks came with the Russian invasion of Ukraine, bringing further uncertainties to agricultural markets and global food security. All this came on top of changes observed due to disruptive weather events related to climate change, and animal disease outbreaks. In light of these disruptions, combined with changes in consumption trends, the analysis presented in the outlook report foresees a slowdown in the production growth of major EU agricultural sectors. In the given set of assumptions considered, production of some crops is expected to stagnate or even slightly decline, while milk and meat production would decline.

Total EU cereal area is projected to decrease marginally to 57.2 million hectares by 2032, driven by a decrease in barley and maize. The EU will remain a net exporter of wheat and barley and a net importer of maize and rice. Food consumption of cereals in the EU will slightly increase by 3.9%, but as feed use will decrease by 6.1%, the overall EU domestic use is expected to remain stable.

The adoption of more sustainable farming practices will impact future development in the EU dairy sector. Alternative production systems (opposite to intensive and conventional ones) are expected to grow their share. As extensive production is favoured to address environmental concerns, dairy herds are expected to decline and lead to a decrease of EU milk production by 0.2% per year by 2032. However, this will not jeopardise the EU's position as the largest global dairy supplier.

Figure 1.1 *Annual growth rates of EU milk production, milk yields and dairy cows' numbers in selected periods*



Source: *EU Agricultural Outlook*

EU dairy consumption is already mature and could remain relatively stable in the future. Among dairy products, cheese consumption could still grow. Rising export demand could also support production. Production of skimmed milk powder will slow down, as trade will grow less due to stronger global competition. In the case of whole milk powder, production could decline due to losses in trade, while domestic use could remain relatively stable.

Sustainability will play an increasingly prominent role in EU meat markets. Meat production will be more efficient and more environmentally friendly, with organic and extensive production systems on the rise. In spite of these developments, consumption of meat in the EU is expected to decline by 1.5 kg per capita per year, with beef particularly affected and pigmeat partly substituted by poultry. Poultry is actually the only sector to expand in terms of production and consumption. This stems from a healthier image of poultry compared to other meats, a greater convenience to prepare, the absence of religious constraints regarding its consumption and its relatively cheaper price.

The total EU cow herd is set to decrease by 2.8 million head or 9.1%, with varying situations across EU countries. After the high level in 2022, the price of beef is expected to come down again due to a more balanced supply and demand.

Regarding pigmeat, EU production is projected to decrease by 1% per year in 2022-32, corresponding to 2.2 million tonnes over the whole period. Some shift to a plant-based diet could lead to a growing importance of protein alternatives to meat, but they are assumed to still represent only a very small market share.

Reduced livestock numbers would lead to lower production for all animal products. Crop production is also expected to decrease overall for many crops due to the lower feed demand (i.e. fodder crops, cereals and oilseeds) while pulses production increases. Expected results also include a general increase in producer and consumer prices. Producer prices would rise particularly for pigmeat, eggs and beef.

Livestock density reduction in the EU could decrease the EU average ammonia emissions from agriculture by up to 11% and average nitrate pollution per hectare by up to 12%. Greater reductions (50-60%) are expected in hotspot regions with very high density currently. Greenhouse-gas (GHG) emissions in the EU are expected to drop by 2 -13.8%, but lower EU production would also see imports increase. As a result, lower emissions in the EU would be offset by increasing emissions in other areas of the world, i.e. emission (or carbon) leakage.

The EU remains self-sufficient in most considered products in 2032 with an ability to generate surpluses which contribute to global food supply, in particular for wheat and dairy products. This reflects the results of successive CAP reforms, and the EU continues providing abundant, high quality, safe and nutritious food to its own population and globally. However, due to agro-climatic and market conditions, the EU will remain reliant on imports for products such as tropical fruit, rice and soya beans.

The current record-high food inflation rates are not expected to persistently impact the share of household expenditure on food over the medium term. This is because consumers are likely to adjust their spending habits to more basic products if prices remain high rather than reducing their overall food consumption.

1.4 Contribution of the Agri-Food Sector to the Economy

Gross Value Added and Modified Gross National Income

The agri-food sector is Ireland's most important indigenous exporting industry, playing a vital role in Ireland's economy. It is estimated that the agri-food sector, which is classified as primary production (agriculture, fishing and forestry) along with food & beverages manufacturing and the wood processing sector, accounted for close to 4% of Gross Value Added at factor cost each year over the past three years. Gross Value Added at factor cost is the Gross Value Added at market prices, less any indirect taxes, plus any subsidies. The table below provides a further breakdown of these figures for the three years with the 2022 figure based on preliminary data from the CSO.

Table 1.2 *Contribution of the Agri Food Sector to GVA, 2020 to 2022*

	2020	2021	2022*
*2022 data is preliminary	Current prices, million euro		
Gross Value Added (GVA) at Factor Cost	359,592	411,794	480,814
GVA in Primary Agriculture, Fisheries and Forestry at Factor Cost	5,117	5,991	7,184
GVA in Food & Beverages Sector	7,541	7,958	10,507
GVA in Wood Processing (estimated)	330	461	621
Total	12,988	14,410	18,311
GVA in Primary Sector as a % of GVA	1.4%	1.5%	1.5%
GVA in overall Agri-Food Sector as % of GVA	3.6%	3.5%	3.8%

Source: *CSO*

The Gross Value Added at Factor Cost in the agri-food sector has grown from €11.3 billion in 2013 to €18.3 billion in 2022, or 63% growth over the ten year period. In 2022 Gross Value Added in the overall agri-food sector represented 3.8% of total Gross Value Added at factor cost. Modified GNI or GNI* is an indicator that was recommended by the Economic Statistics Review Group and is designed to exclude globalisation effects that are disproportionally impacting the measurement of the size of the Irish economy. Preliminary CSO results indicate that in 2022, the agri-food sector accounted for 6.7% of GNI*, up from 6.2% in 2021 and 6.4% in 2020.

1.5 Agricultural Accounts in Ireland

The Central Statistics Office (CSO) has published the Final Estimate on Output, Input and Income (OII) in Agriculture for 2022. The OII outlines the performance of the primary producers in agriculture, providing details on the value of output at producer prices or at the farm gate, the cost of inputs, and the overall income or operating surplus in agriculture. In 2022, the operating surplus in agriculture was €4.7 billion, up from €3.7 billion in 2021, an increase of one billion euro or 28%. Goods output at producer prices increased by 28% also, to €12.3 billion, up from €9.6 billion in 2021 and from €8.4 billion in 2020. Intermediate consumption, which is the value of all goods and services used as inputs in the production process excluding fixed assets, increased by 29% to €7.9 billion, up from €6.1 billion in 2021.

The main drivers of the increase in the value of goods output were cereals, up 60% to €695 million and milk where the price increased significantly in 2022, resulting in the value of milk output to be up by €1.6 billion to just over €5 billion, up in value by 48%. The value of livestock at producer prices was up 14% to €4.5 billion with cattle performing best, up by 17%, followed by pigs up by 12%.

On the input side, the increase in intermediate consumption was almost €1.8 billion, up 29% on 2021. Fertilisers had increased by 100% from €605m to €1.2 billion, while feeding stuff went from €1.8 billion to €2.3 billion, an increase of 30%.

Feedingstuffs, energy and lubricants, along with fertilisers, accounted for 53% of the total costs of intermediate consumption in 2022. These three areas of expenditure combined increased in cost from €2.9 billion to €4.2 billion, an increase of 46%. The cost of contract work, which represents about 7% of total intermediate consumption, increased by €110 million or 24% in 2022 to €574 million.

Subsidies less taxes on production and on products was worth €1.94 billion in 2022, up on 2021 by €222 million or 13%.

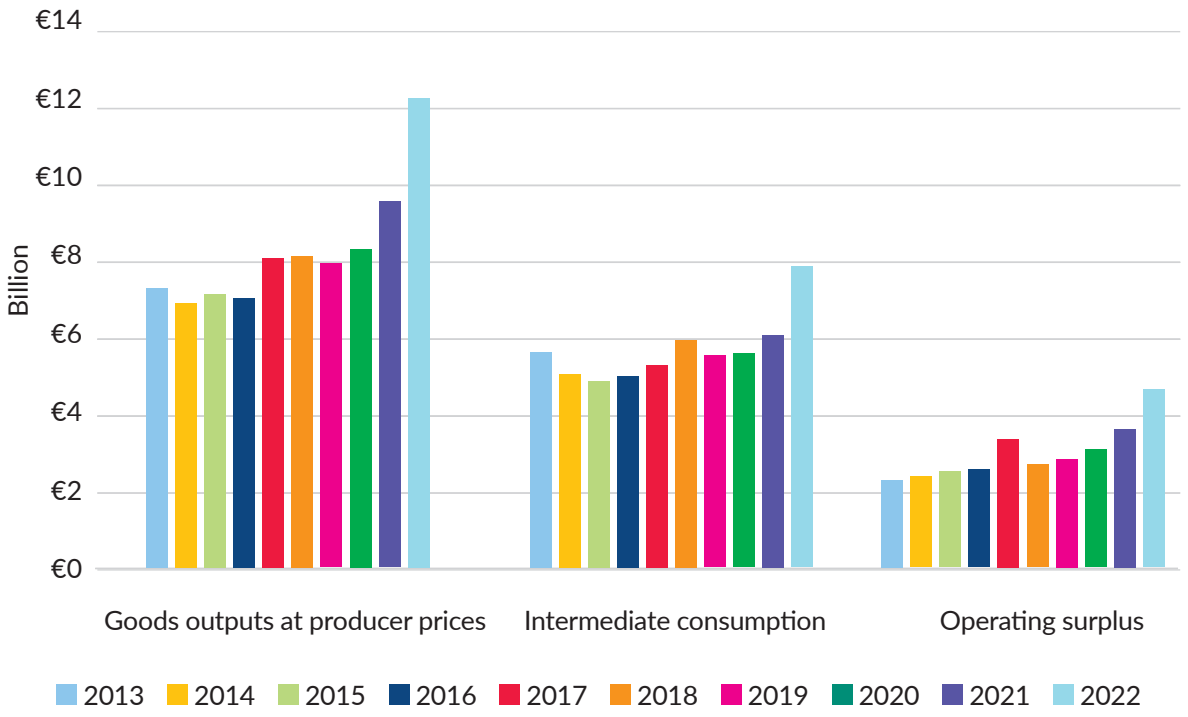
Table 1.3 Output, Input and Income in Agriculture, 2020 – 2022

	2020	2021	2022	% Change 2021 - 2022
	Value €m	Value €m	Value €m	
Goods Output at Producer Prices	**€8,377**	**€9,605**	**€12,285**	**28%**
Contract Work	€431	€464	€574	24%
Subsidies less Taxes on Products	€95	€37	€35	
Agricultural Output at Basic Prices	€8,902	€10,107	€12,894	28%
Intermediate Consumption	**€5,625**	**€6,143**	**€7,919**	**29%**
Gross Value Added at Basic Prices	€3,277	€3,964	€4,975	26%
Fixed Capital Consumption	€992	€1,088	€1,213	11%
Net Value Added at Basic Prices	€2,285	€2,875	€3,762	31%
Other Subsidies Less Taxes on Production	€1,667	€1,679	€1,904	13%
Factor Income	€3,951	€4,555	€5,665	24%
Compensation of Employees	€799	€876	€946	8%
Operating Surplus	**€3,152**	**€3,678**	**€4,720**	**28%**

Source: *CSO*

Looking at the trends in the OII over the past decade, there is an upward trend in each of the three main components, namely goods output at producer prices, intermediate consumption and operating surplus. It is always good for the producer to see the value of goods output increasing; however, the producer needs that increase to be greater than any increase in the cost of intermediate consumption. In this respect, 2022 was a good year. It resulted in the 'bottom line' or operating surplus increasing by 28%, the highest increase since 2017. Over the past ten years, goods output at producer prices has increased by 67% while intermediate consumption has increased by a more modest 40%, resulting in operating surplus increasing by 100% since 2013.

Figure 1.2 *Trends in Operating Surplus, Goods Output and Intermediate Consumption, 2013 – 2022*



Source: CSO

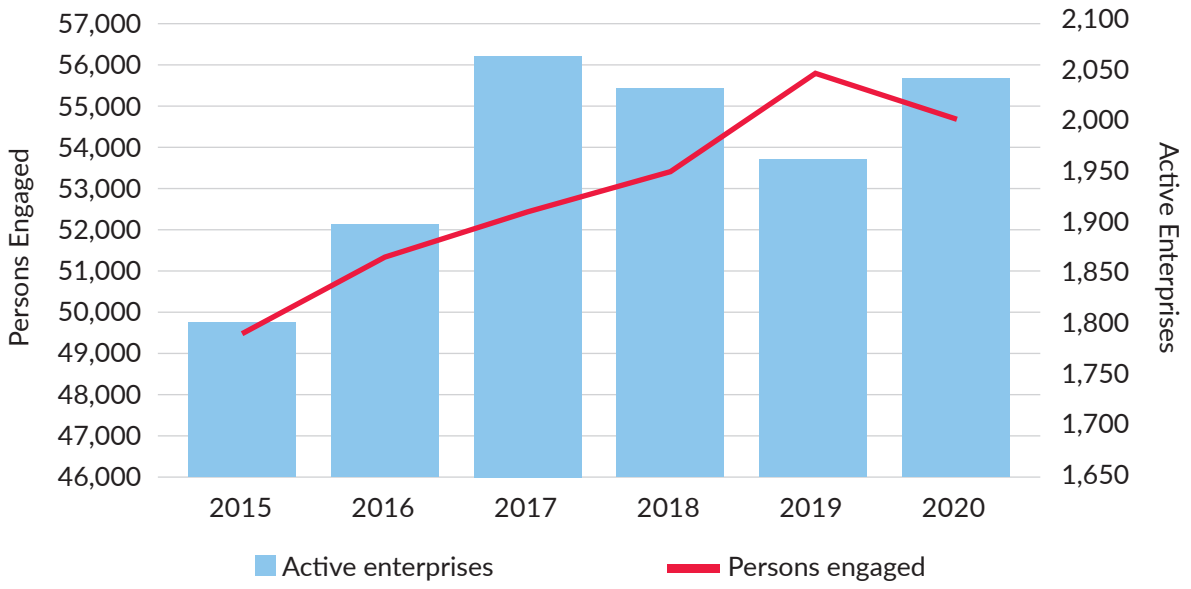
1.6 Contribution of the Food and Beverages Sector

Food and beverage enterprises

The CSO Business Demography release provides data on the number of enterprises and the number of persons engaged in these enterprises. The latest data available is up to 2020. In that year there were 2,046 active food products, beverage and tobacco enterprises, up from 1,966 in 2019 and 2,034 in 2018. Despite the increase in number of enterprises, the number of persons engaged in these enterprises fell slightly from 55,731 in 2019 to 54,669 in 2020. However, between 2015 and 2020 the number of persons engaged in active food products, beverage and tobacco enterprises grew by over 10.5% or 5,205 persons while the number of enterprises grew by 13.5% or 243 enterprises.

The numbers employed in these enterprises had been increasing each year between 2015 and 2019 but in 2020 this trend was reversed, and numbers employed dropped by 1,062. This may have been due to the closure of the food service industry due to the impact of COVID-19 in 2020.

Figure 1.3 *Active Food Products, Beverages and Tobacco Enterprises & Persons Engaged.*



Source: *CSO (BRA11)*

Of the total enterprises, 3% or 57 enterprises had 250 persons or more engaged. These larger enterprises had a total of 30,714 persons engaged or 56% of the total. Seventy seven percent or 1,578 of enterprises had less than 10 people engaged for a total of 3,008 persons or 6% of total engaged persons.

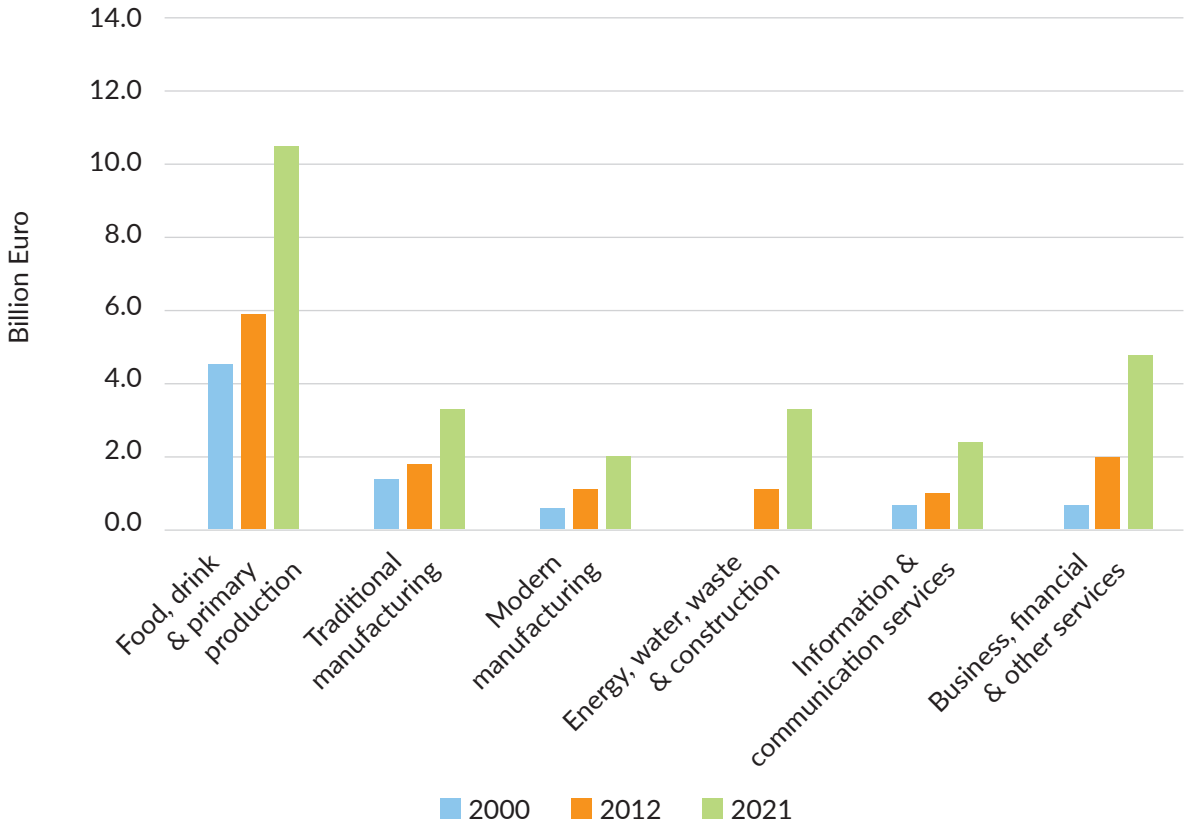
Annual Business Survey of Economic Impact (ABSEI)

The Annual Business Survey of Economic Impact (ABSEI) 2021 is a survey of approximately 4,200 client companies of Enterprise Ireland, IDA Ireland and Údarás na Gaeltachta, employing ten or more employees in Ireland. All IDA Ireland clients are foreign-owned while Enterprise Ireland and Údarás na Gaeltachta have both Irish and foreign-owned client companies. It comprises the Manufacturing & Information, Communication and Other Internationally Traded Services sectors. This survey includes a number of Food and Beverage Manufacturers. The first ABSEI survey was conducted in 2000 and the results for 2021 look back over the past 21 years.

Key findings in this report for Irish-owned clients include:

- Irish-owned firms have increased their export intensity from 38% in 2000 to 53% intensity in 2021.
- The largest sector for Irish-owned clients is the Food, Drink & Primary Production sector with sales of €18.1 billion in 2021 – an increase of 12.0% over 2020 and of 3.3% per annum increase over the 2000 figure of €9.2billion.
- While the Food, Drink & Primary Production sector accounted for 35% of the sales in Irish-owned industry in 2021, it accounts for 25% of the employment.
- The Food, Drink & Primary Production sector accounted for 40% of all export sales by Irish-owned companies in 2021. This sector has increased exports from €4.5bn in 2000 to €10.4bn in 2021, a per annum increase of 4.1% in current prices.
- The Food, Drink & Primary Production sector has an export intensity of 57% in 2021, which is an increase on its 2000 intensity ratio of 49%.

Figure 1.4 *Exports by Sector in Irish-owned Companies Client Firms, 2000, 2012, 2021*



Source: *Annual Business Survey of Economic Impact*

- Value-added per person employed in Food and Drink Manufacturing is estimated at €82,800 in 2021, an increase of 4.5% per annum in nominal terms since 2000.
- The Food, Drink & Primary Production sector purchased the majority or 81% of its materials in Ireland in 2021 valued at €10.3 billion. Of all the Irish raw materials purchases by Irish owned firms, the majority or 72% related to the Food and Drink sector in 2021.
- The proportion of Irish services purchased by Irish-owned firms, ranges from 44% for Business, Financial and Other Services firms to 84% for Food, Drink & Primary Production firms in 2021.
- The Food, Drink & Primary Production sector maintained the highest share of direct expenditure as a percentage of sales at 76% in 2021 down from 82% in 2000.

Key Business Indicators for Foreign-owned Agency Clients include:

- The vast majority of products and services produced by foreign-owned firms are destined for export, with an export intensity of 96% in 2021, at this constant level since 2015.
- Foreign firms spend less on Irish materials and more on payroll and Irish services than Irish firms.
- The Food, Drink & Primary Production sector, with an 88% share of sales for export in 2021, increased its proportion of exports from 59% in 2000.
- The largest proportion of Irish-sourced materials is found in the Food, Drink & Primary Production sector where 42% of all materials purchased were sourced in Ireland. In monetary terms, this amounted to €950 million spent in Ireland in 2020.
- The share of total services sourced in Ireland by foreign-owned Food & Drink sector declined from the 2000 figure of 43% to 28% in 2021 (Absolute value €475.8 million).

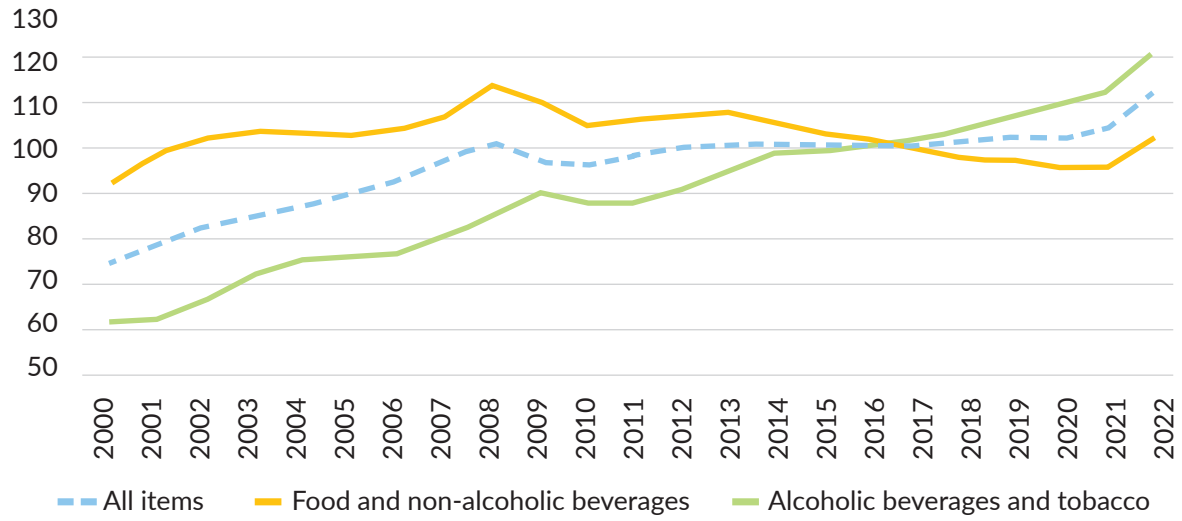
1.7 Consumer Price Index

Every month the CSO gather and publish the Consumer Price Index (CPI). This is designed to measure the change in the average level of prices (inclusive of all indirect taxes) paid for consumer goods and services by all private and institutional households in the country and by foreign tourists holidaying in Ireland. Approximately 50,000 prices are collected for a representative basket, consisting of 615 item headings in a fixed panel of retail and service outlets throughout the country. Based on these prices, the CSO can track the change in prices of goods over time.

Figure 1.5 displays the relative movement of the CPI since the start of this century. The dashed line represents all items included in the CPI basket of goods and between the year 2000 and 2021, which had gone from 75.1 to 104.2, an increase of 39%. In 2022 the dashed line rises sharply indicating a significant rise in the CPI for all goods. In 2022 it rose by 8% compared to 39% over the previous 21 years.

Over the past 22 years food and non-alcoholic beverages has risen from 92.5 to 101.8, a rise of 10%, while alcoholic beverages and tobacco have risen by 98%.

Figure 1.5 *Consumer price Index, 2000 to 2022 (Base Dec 2016=100)*



Source: *CSO (CPA01)*

Since the second half of 2021 and continuing into 2022 the CPI has risen sharply. Prices rose by 9.2% in the year to October 2022, the largest increase since June 1984. An earlier section in this chapter, section 1.2, looks briefly at some of the reasons for the increase in the CPI. While the CPI is dropping slightly since its highest point in October 2022 it is remaining high but is moving in a downward direction during 2023.

Irish Food Prices Compared to EU Food Prices

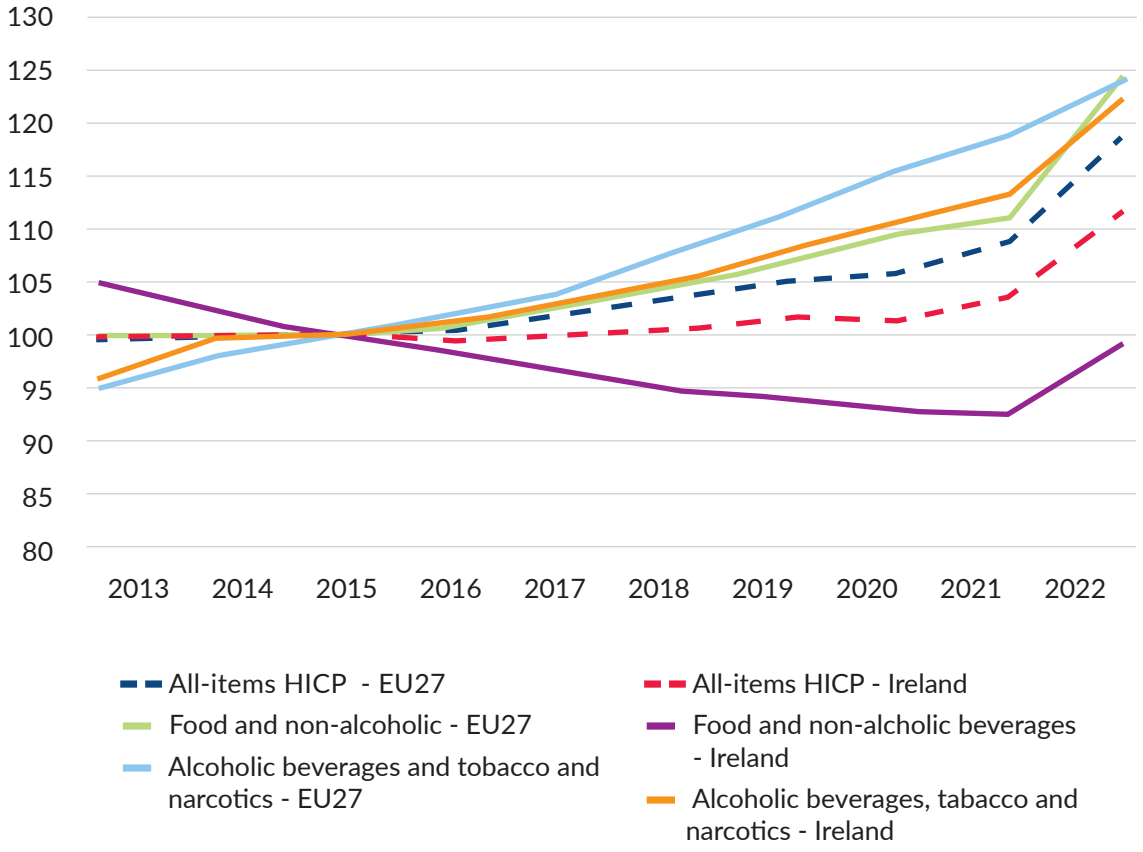
Eurostat produces European statistics in partnership with National Statistical Institutes, such as the CSO in Ireland and other national authorities in the EU Member States. The data Eurostat produce is based on similar data collected from each member state, to allow comparison of data from one country to another.

In figure 1.6, data from both Ireland and the EU 27 is shown for the Harmonised Index of Consumer Prices (HICP). Both the CPI, which is the official measurement of inflation in Ireland, and the HICP are designed to measure, in index form, the change in the average level of prices paid for consumer goods and services. A number of items included in the CPI are not included

in the HICP, such as mortgage interest, motor tax, house and car insurance, while imputed rentals for housing are included in the HICP.

Figure 1.6 outlines that since 2013 alcoholic beverages, tobacco and narcotics have risen the most both in the EU 27 and in Ireland. Food and non-alcoholic beverages in Ireland dropped in price between 2013 and 2021 but rose sharply in 2022, however they did not rise as steeply as in the EU 27.

Figure 1.6 *Comparison of EU and Irish Prices, 2013 – 2022 (2015 = 100)*



Source: *Eurostat*

Price Levels of Food, Beverages, and Tobacco 2022: How Ireland Compares

In June 2023, Eurostat issued a release focusing on the relative price levels of food, beverages and tobacco in 36 European countries. The country groups included in the analysis are the 27 European Union (EU) Member States, three EFTA countries (Iceland, Norway and Switzerland) and six candidate countries (Albania, Bosnia and Herzegovina, Montenegro, North Macedonia, Serbia and Türkiye).

Price levels for food, beverages and tobacco vary considerably across the EU Member States. In 2022, the prices for food and non-alcoholic beverages in Denmark and Luxembourg were 21% above the EU average, while in Romania they were 28% below the EU average. Non-alcoholic beverages were more expensive in Denmark at 39% above the EU average and least expensive in Romania at 20% below. Alcohol was priced in Finland at 114% above the EU average, while in Hungary it was at 18% below. For tobacco, the highest prices were observed in Ireland at 159% above the EU average, while the lowest were recorded in Bulgaria at 51% below.

According to the CSO report, Ireland was the most expensive country among 36 European countries for tobacco with Switzerland the most expensive country for food, Norway for non-alcoholic beverages and Iceland for alcoholic beverages. Amongst the EU Member States,

Luxembourg is the most expensive country for food, Denmark for non-alcoholic beverages, Finland for alcoholic beverages and Ireland for tobacco. The least expensive countries of all 36 are Türkiye for food and tobacco, North Macedonia for non-alcoholic beverages and Hungary for alcoholic beverages. Among the EU Member States, the lowest prices for food and non-alcoholic beverages are observed in Romania. Alcoholic beverages are least expensive in Hungary and tobacco is least expensive in Bulgaria.

Ireland's position varied from being the most expensive for tobacco, to being the seventh most expensive for food overall, 13th most expensive for meat, seventh for bread and cereals, 23rd for fish and ninth most expensive for milk, cheese and eggs.

Table 1.4 *Food Relative Price Levels*

Food Relative Price Levels	
EU27 Average	100
Most Expensive (36 countries)	(Switzerland) 165
Most Expensive European Union (27)	(Luxembourg) 122
Ireland	113
Least Expensive (36 countries)	(Türkiye) 63
Least Expensive European Union (27)	(Romania) 71

Source: *Eurostat*

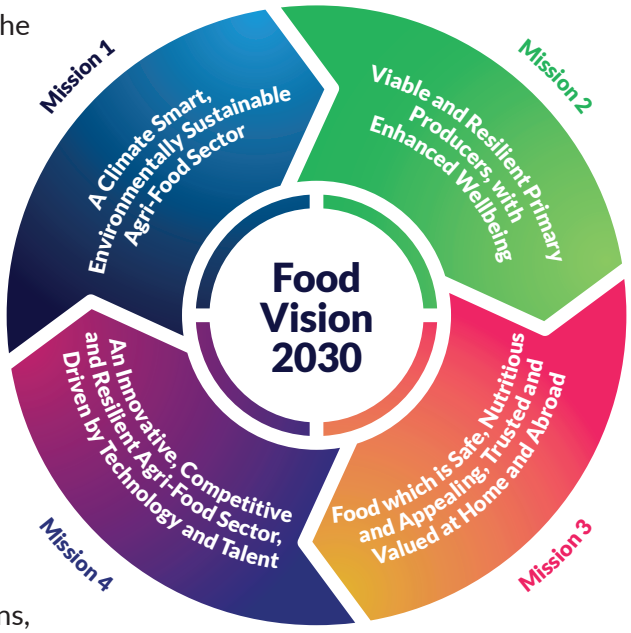
Price level indices (PLIs) provide a comparison of the countries' price levels relative to the European Union average: if the price level index is higher than 100, the country concerned is relatively expensive compared with the EU average, while if the price level index is lower than 100, then the country is relatively cheap compared with the EU average. The EU average is calculated as the weighted average of the national PLIs, weighted with expenditures from national accounts, corrected for price level differences.

PLIs are not intended to rank countries strictly. In fact, they only provide an indication of the order of magnitude of the price level in one country in relation to others, particularly when countries are clustered around a very narrow range of outcomes. The degree of uncertainty associated with the basic price data and the methods used for compiling purchasing power parities may cause minor differences between the PLIs and result in differences in ranking which are not statistically or economically significant.

1.8 Agri-Food Strategy – Food Vision 2030

Background

Food Vision 2030, Ireland's shared stakeholder-led strategy for the agri-food sector, has the potential to transform our agriculture, food, forestry and marine sectors, with environmental, economic and social sustainability at its core. Food Vision 2030 aims for Ireland to be *"A World Leader in Sustainable Food Systems"*. Food Vision 2030's goals are grouped around four high-level Missions for the sector:



Mission 1 is to progress *"A Climate Smart, Environmentally Sustainable Agri-Food Sector"* with an overall target of climate-neutrality by 2050, with verifiable progress to be achieved by 2030. There are seven goals in this mission encompassing emissions reductions, carbon sequestration, improvements in air quality, restoration and enhancement of biodiversity, improvements in water quality, development of diverse forests, enhanced seafood sustainability, exploring the bioeconomy and strengthening Origin Green.

Mission 2 aims for *"Viable and Resilient Primary Producers, with Enhanced Wellbeing"*. This mission places primary producers, Irish farmers, fishers and foresters, at the centre of the strategy, improving the competitiveness and productivity of primary producers; increasing the creation of value and distributing it fairly; introducing greater diversification in production systems and incomes; and improving the social sustainability of primary producers across areas such as generational renewal, gender balance, health and safety, mental health and wellbeing and wider rural development.

Mission 3 is for *"Food which is Safe, Nutritious and Appealing, Trusted and Valued at Home and Abroad"*, with a particular focus on the importance of trade. Food Vision 2030 looks to protect and build on Ireland's global reputation as a trusted supplier of high quality, safe, sustainable food to consumers at home and abroad, built on sustainable, steady value growth. This mission aims to prioritise coherent food and health policies for better health outcomes, to enhance consumer trust in our food system, to create value add through insight, innovation and product differentiation.

Mission 4 is for an *"Innovative, Competitive and Resilient Agri-Food Sector, Driven by Technology and Talent"*, with key enabling goals around research, innovation and talent. There are seven goals in this mission, which are relevant to all other missions and will act as key enablers. They include moving to a challenge-focused innovation system, having a strategic approach to funding R&D, developing dynamic knowledge exchange practices, enhancing the use of technology and data, improving competitiveness and resilience, attracting and nurturing diverse and inclusive talent, and improving policy coherence in Sustainable Food Systems between Ireland's domestic policy and its development cooperation and foreign policy.

Food Vision 2030 envisages a more output-focussed collaborative innovation system by 2030, with private R&D to reach 1% of turnover. The agri-food sector should be more competitive and resilient, and seen as attractive by a young, diverse and talented workforce.

Ireland will advocate for Sustainable Food Systems (SFS) internationally and for the development of a recognised SFS measurement or index to supplement and strengthen the Vision for 2030. Ireland's advocacy for SFSs is an important part of the deepening strategic relationship between Africa and the EU, and within Ireland's overall relationship with Africa.

More information on Food Vision 2030 can be found at gov.ie - Food Vision 2030 – A World Leader in Sustainable Food Systems (www.gov.ie).

Monitoring and Implementation of Food Vision 2030

The success of Food Vision 2030 will depend on effective implementation and oversight. For this reason, a Monitoring and Implementation Framework is included in the Strategy and highlights areas for collaboration and partnership within the sector but also with key external stakeholders. It also details oversight and monitoring mechanisms for implementation.

A **High Level Implementation Committee (HLIC)** monitors progress on the delivery of the four Missions. The HLIC is chaired by the Minister for Agriculture, Food and the Marine, Charlie McConalogue, TD, and includes Senior Management from DAFM, Senior Officials from Other Government Departments (Department of Environment, Climate and Communications, Department of Enterprise, Trade and Employment and Department of Public Expenditure, NDP Delivery and Reform) and the CEOs of the relevant State Agencies (Bord Bia, Teagasc, BIM, EI, EPA and FSAI).

Minister McConalogue, TD, chaired four meetings of the HLIC during 2022 and the minutes of the meetings can be found at Food Vision 2030 - A World Leader in Sustainable Food Systems.

The immediate priority identified by the HLIC in the context of climate, was to commence work on the important actions to determine the sustainable environmental footprint of the dairy and the beef sectors. Work on these actions has progressed.

- The **Food Vision 2030 Dairy Group** was established in late January 2022 and tasked with producing a detailed plan to manage the sustainable environmental footprint of the dairy sector. The Final Report was submitted to the Minister on the 25th of October 2022 and sets out a list of 19 recommended actions for the sector. This is published on the Gov.ie website. The report was prepared through a process of collaboration and cooperation and represents a broad consensus on the key actions in the Group's view that are required in the context of the Climate Act 2021 and the specific ceiling set for emissions from the agriculture sector in July 2022. The Report can be found at gov.ie - Food Vision 2030 – A World Leader in Sustainable Food Systems (www.gov.ie).

The report is being considered by the Minister and many of the actions have already been included in the Climate Action Plan 2023 implementation process. The Group will now move on to progressing the other important actions for the dairy sector set out in Food Vision 2030.

- **The Food Vision 2030 Beef and Sheep Group** was established in June 2022 and tasked with producing a detailed plan to manage the sustainable environmental footprint of the beef sector. The Final Report was submitted to the Minister on the 30th of November 2022 and sets out a list of 21 recommended actions for the sector. The Report can be found at Food Vision 2030- Beef and Sheep Group Final Report.

The report is being considered by the Minister and many of the actions have also been included in the Climate Action Plan 2023 implementation process. The Group will now move on to progressing the other important actions for the drystock sector set out in Food Vision 2030.

- **The Food Vision 2030 Tillage Group** convened for the first time in May 2023, highlighting the significant role the tillage sector plays in Ireland's food and feed security and the ambition to grow the tillage area. Tillage is recognised as one of the most carbon efficient sectors in Irish agriculture, as set out in Food Vision 2030 and in the Climate Action Plan 2023, with a target tillage area of 400,000 hectares by 2030.

Food Vision 2030 Implementation Plan

A formal Food Vision 2030 Implementation Plan was published in May 2022. This identifies stakeholders, deliverables and a timeframe for each of the 218 actions under the 22 goals. On a biannual basis, DAFM collates updates from across the various stakeholders. This process allows DAFM to monitor the implementation, examine areas where progress is not being made and to review as necessary.

The Implementation Plan can be found at Food Vision 2030 - A World Leader in Sustainable Food Systems - Implementation Plan.

Food Vision 2030 Event

On the 13th October 2022, a Food Vision 2030 Event was held in The Printworks, Dublin Castle. The event was opened by An Taoiseach Micheál Martin who gave the keynote address and said, "Food Vision 2030 is a landmark strategy for creating sustainability in all its forms, environmental, economic and social. It is an ambitious strategy for the sector, by the sector, and outlines a strong and sustainable future for our farmers, fishers, foresters, and food & drink companies. The Irish agri-food industry has shown, through the challenges over the past number of years, that it can be agile and responsive when change is required – and Food Vision 2030 is an important element of this transition".

The Food Vision 2030 Event consisted of:

- Presentations - International Perspective on Sustainable Food Systems
- Panel Discussion - Developing Food Vision 2030 and its Potential
- Panel Discussion - Implementation Food Vision 2030: Delivering for the Environment and for Primary Producers (Missions 1 and 2)
- Panel Discussion - Implementing Food Vision 2030: Update on Food Vision 2030 Dairy and Beef and Sheepmeat Groups
- Panel Discussion – Implementation Food Vision 2030: Delivering High-Value, Safe Nutritious Food and the Role of Research and Innovation (Missions 3 and 4)

There were also speeches from Minister of State, Senator Pippa Hackett, Minister of State Martin Heydon and closing remarks from the Secretary General Brendan Gleeson on the day. The event was recorded and all details can be found here Food Vision Event - 13 October 2022.

Food Vision 2030 Annual Report

The Food Vision 2030 Strategy was launched in August 2021 and implementation of the strategy is well underway with important work ongoing on many of its actions. While the detailed actions are important, just as importantly, Food Vision 2030 provides a framework of four missions and 22 goals, within which the sector can progress towards better economic, environmental and social sustainability.

The aim of the Food Vision 2030 Annual Report is to give an overview of progress to date and highlight some of the key achievements within each of the four missions. A more detailed report, describing progress on each of the 218 actions contained within the Strategy, was submitted to the High-Level Implementation Committee (HLIC) in November 2022, and is published on gov.ie - Food Vision 2030 – A World Leader in Sustainable Food Systems (www.gov.ie).

The Annual Report provides an update on the implementation and monitoring framework, including the work of the HLIC, the work of the Environmental Working Sub-Group (EWSG), key achievements across each of the four Missions as well as an overview of the Food Vision 2030 Event in October 2022.

The significant environmental challenges facing the sector are highlighted by the EWSG and the Environmental Protection Agency and finally, this report provides some of the many examples of how Food Vision 2030 was the focus of international engagements since its launch.

In terms of overall progress, 6 actions are now complete, 64 actions have substantial action undertaken, 142 actions have commenced and are progressing and 6 actions have not yet commenced.

Figure 1.7 *Progress on Actions Contained in Food Vision 2030*

The Annual Report is published on gov.ie - Food Vision 2030 – A World Leader in Sustainable Food Systems (www.gov.ie).

Case Study

Ireland's Support to Vulnerable Small-Family Farms in Ukraine

The Department of Agriculture, Food, and the Marine (DAFM) provided funding of €450,000 to a UN Food and Agriculture Organisation (FAO) project supporting potato farming in Ukraine in April 2023. The funding for this project came from DAFM's international cooperation budget.

The main objective was to provide support to small-holder farmers in Ukraine, specifically focusing on potato production, and complementing the previous assistance provided to smallholder poultry production in Ukraine earlier in 2023. The project involved the transport of five hundred tonnes of certified seed potatoes to Ukraine. FAO Ukraine distributed these seed potatoes (50 kg per farmer) to 10,000 highly vulnerable small-holder farmers in rural areas at the frontline of the illegal Russian war in eastern and southern Ukraine.

Prior to 2022 Ukraine imported between 10,000 – 15,000 tonnes of certified seed per annum from other European countries. Since the outbreak of war, the normal structures of seed potato supply in Ukraine have been broken and the imports of certified seed input stocks has been severely hampered. With minimal importation of fresh seed, the overall quality of seed potato stocks in Ukraine will be degraded which will lead to a significant reduction of potato yields over time.

To maintain access to healthy seed stocks and boost the yields of ware crops, it is imperative that farmers have access to imported certified seed potatoes to replenish their own planting material. Irish company IPM Potato Group facilitated this process, securing large volumes of seed potato from growers in Europe. These varieties are cultivars grown by IPM Potato Group specifically to thrive in Ukraine's agro-ecological conditions. The utilisation of these carefully selected seed potatoes lays the foundation for a successful and sustainable potato cultivation in the next few years.

To maintain access to healthy seed stocks and boost the yields of ware crops, it is imperative that farmers have access to imported certified seed potatoes to replenish their own planting material. The volume of quality seed potatoes acquired through this initiative serves a dual purpose. Firstly, it anticipates that approximately 10% of the harvest will be preserved as seed potatoes for subsequent seasons, ensuring the continuity of potato production and long-term sustainability for small-holder farmers.

Secondly, the remaining volume of seed potatoes, estimated to be capable of producing up to 7,000 tonnes of ware potatoes, presents an opportunity to address food security concerns. This quantity of ware potatoes has the potential to meet the average annual consumption needs of 45,000 to 50,000 individuals. The project aligns with the FAO's efforts to rebuild agricultural capacity and assist rural families in resuming production for their household consumption, thereby fulfilling their immediate food requirements.

CHAPTER 2

Farm Income and Structures

According to the Census of Agriculture in 2020, there were **135,037 farms** in Ireland.

In 2022, direct payments accounted for an average of **40% of Family Farm Income**.

Average family farm income for 2022 was **€45,809**, a record year, up by 32% on 2021.

2.1 Overview

2022 was a challenging year for farmers in Ireland. The illegal invasion of Ukraine by Russia in February saw fertiliser, feed and energy prices rise significantly. Input costs, which had begun to rise from the second half of 2021, rose quickly in 2022 adding to the uncertainty of the supply of fertiliser and animal feed. While dairy prices rose to a record high on world markets and grain prices were strong, the increase in input costs significantly impacted livestock farmers. This chapter outlines the impact these events had on farm incomes. It should be remembered that this is average national data and that the reality for an individual farmer can be quite different.

Data from numerous sources is analysed to outline developments in farm income and structures, both at Irish and EU level. Data is sourced mainly from the Central Statistics Office (CSO), Teagasc, Central Bank and Eurostat. The data from these sources is used to generate an overview of farm income and farm structures in Ireland. In addition, the level of off-farm income sources and direct payments is examined. The viability of Irish farms is considered using Teagasc's National Farm Survey results and the support schemes for farmers. Investment and borrowings in the agri-food sector, the age profile of farmers and the role of women in agriculture are also examined.

2.2 National Farm Income (Operating Surplus), 2022

There are two main sources of national farm income. One is the Central Statistics Office (CSO) release called Output, Input and Income in Agriculture, which is examined here, and the second is the Teagasc National Farm Survey, which is examined later in this chapter.

Three times each year, the CSO release a statistical publication called Output, Input and Income in Agriculture (OII). The first or advance estimate is generally released in early December of the reference year. This is based on the data available at the time, which is not fully complete. The Advance estimate is updated in March of the following year when the Preliminary estimate is published. This incorporates all additional up-to-date information that has become available by that time. In June, the Final estimate of the agricultural accounts is prepared based on the complete set of data. The OII sets out the estimated value of goods output at producer prices for livestock, livestock products and crops. It estimates the cost of intermediate consumption or inputs, includes the value of subsidies and estimates the operating surplus or estimated aggregate farm income.

In 2022, the total estimated value for goods output at producer prices was a record €12.3 billion, up from €9.6 billion in 2021, a 28% increase. This comprised of €4.5 billion for livestock, €5.1 billion for livestock products (mainly milk) and €2.6 billion for crops which include cereals, horticulture, and forage plants such as silage & hay used on the farm. The value of milk output rose by 48% or €1.6 billion in 2022 driven mainly by very strong prices for dairy products on the world market. Goods output at producer prices have grown at an average rate of over 6% per annum since 2000, when they were valued at €4.9 billion.

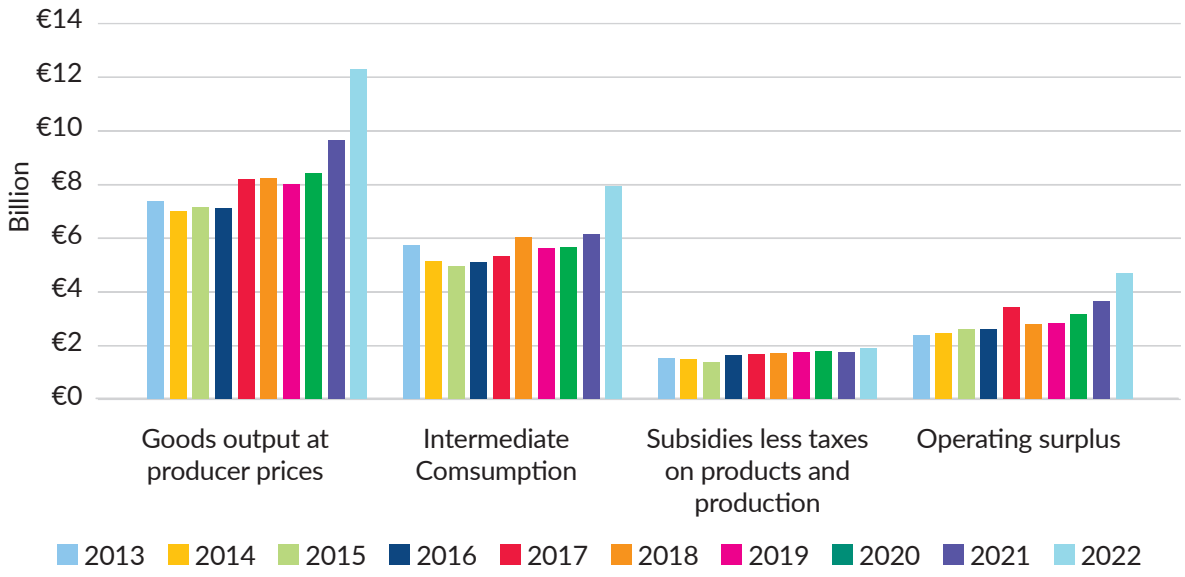
While the value of goods output at producer prices increased by 28% in 2022, a significant portion of this additional value to farmers was taken up by a 29% increase in intermediate consumption. This is the value of all goods and services used as inputs in the production process, excluding fixed assets. Input prices were rising since 2021 but following the illegal invasion of Ukraine by Russia in February 2022 input prices such as energy, fertiliser and animal feed increased at a much faster rate. Feeding stuffs and fertilisers account for almost 45%, or €3.5 billion, of total intermediate consumption in 2022, up from €2.4 billion in 2021. Spend on fertiliser rose by 100% in 2022 compared to 2021, to €1.2 billion, up from €0.6 billion. Total,

spend on intermediate consumption in 2022 was €7.9 billion, up by €1.8 billion on the 2021 spend of €6.1 billion.

The operating surplus was €4.7 billion, up 28% on the 2021 value of €3.7 billion. The operating surplus is an estimate of farm income before deductions for interest payments on borrowed capital, land annuities and rent paid by farmers to landowners for the use of their land. This is the fourth year in a row that the operating surplus has increased, up 3.7% in 2019, up 10.1% in 2020, up 16.7% in 2021 and up 28.3% in 2022. In 2018 operating surplus was €2.8 billion and in 2022 it had increased by over 70% to €4.7 billion.

Total subsidies, less taxes on products and production, provide a significant portion of operating surplus. In 2022 they were worth €1.9 billion, up from €1.7 billion in 2021, or 12.9%. The pig exceptional payment scheme, along with the tillage incentive schemes, helped boost the subsidies in 2022.

Figure 2.1 *Goods Output, Intermediate Consumption, Net Subsidies and Income, 2013 - 2022*



Source: *CSO*

Operating Surplus (OS)

Operating surplus is defined and calculated by the CSO by subtracting compensation of employees from farm income accruing from farm output. The figure is comprised of the operating surplus earned by farmers and that earned by agricultural contractors. It is an estimate of income before deductions for interest payments on borrowed capital, land annuities and rent paid by farmers to landowners for the use of their land. It does not include income from non-farming sources and may not be equated to household income.

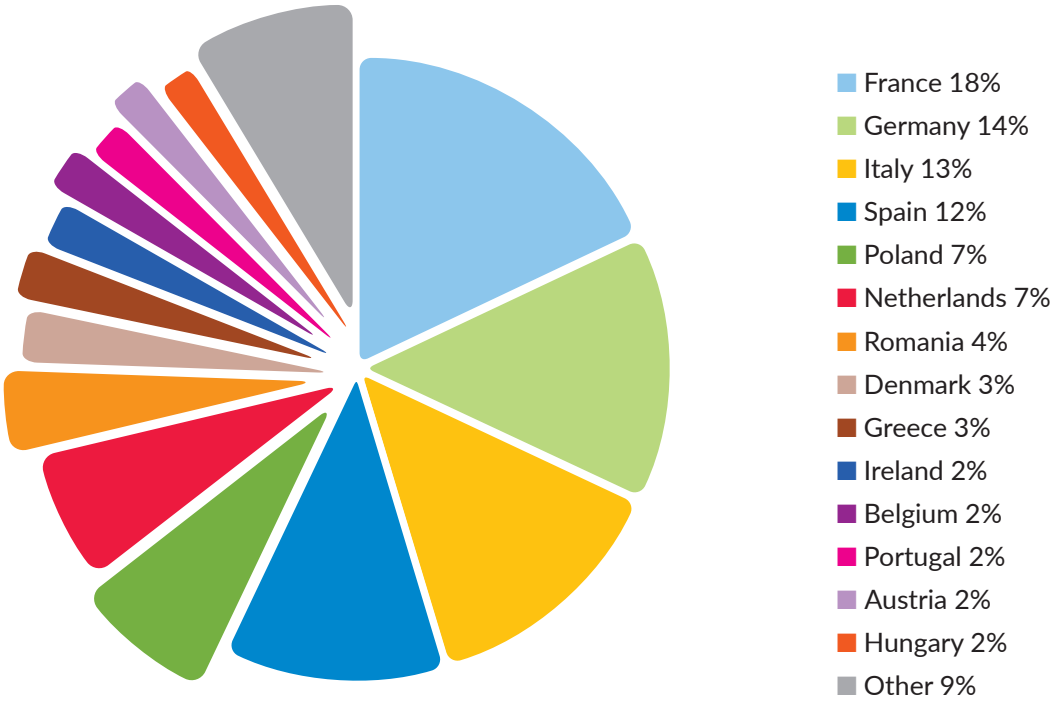
Agriculture Output in Europe

Key Figures on the European Food Chain 2022 edition, published by Eurostat, provides a selection of indicators concerning the food chain, from primary production in agriculture and fisheries through to consumption. Data is presented for the European Union (EU), its individual Member States and European Free Trade Agreement (EFTA) countries. This publication may be viewed as an introduction to agriculture, fisheries and food chain statistics. It provides a

starting point for those who wish to explore the wide range of data that is freely available on Eurostat. Most datasets available in Key Figures on the European Food Chain are from 2020, with some from 2021. More up-to-date data on European agriculture production can be found at the agriculture page on Eurostat where data tables are updated during the year as data becomes available.

According to Eurostat data, Ireland has the tenth largest amount of agricultural output, valued at producer prices, among the EU 27, although it is the fifteenth largest country. France, which is the largest country in the EU 27, produces 18% of the agricultural output in the Union. The top five EU countries for agriculture output are France, Germany, Italy, Spain and Poland. Together they are responsible for 65% of total EU 27 agricultural output. Interestingly the Netherlands and Denmark, which have the sixth and seventh smallest land mass in the EU27, respectively produce the sixth and eight most agricultural output of the 27 EU countries.

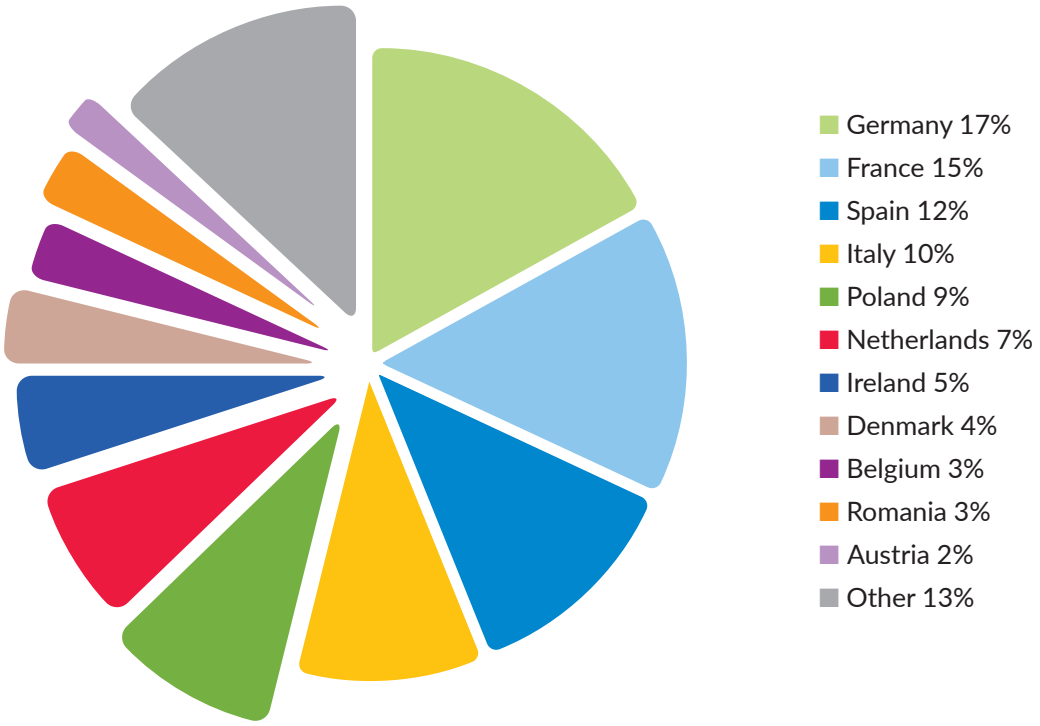
Figure 2.2 *Proportion of Agricultural Output by Country in EU27, 2022*



Source: *European Accounts for Agriculture*

Ireland's farmers are mostly animal farmers with a small number of tillage farmers. Animal output, as calculated by Eurostat includes meat, milk, eggs and other animal products. As this covers a significant amount of Irish agriculture, it is not that surprising to see that Ireland produces the seventh highest animal output at producer prices in the EU27, at 5% of total animal output. Germany and France have the highest value animal output at 17% and 15% respectively. Spain, Italy and Poland are all close to 10%, while the Netherlands is at 7%, followed by Ireland at 5%.

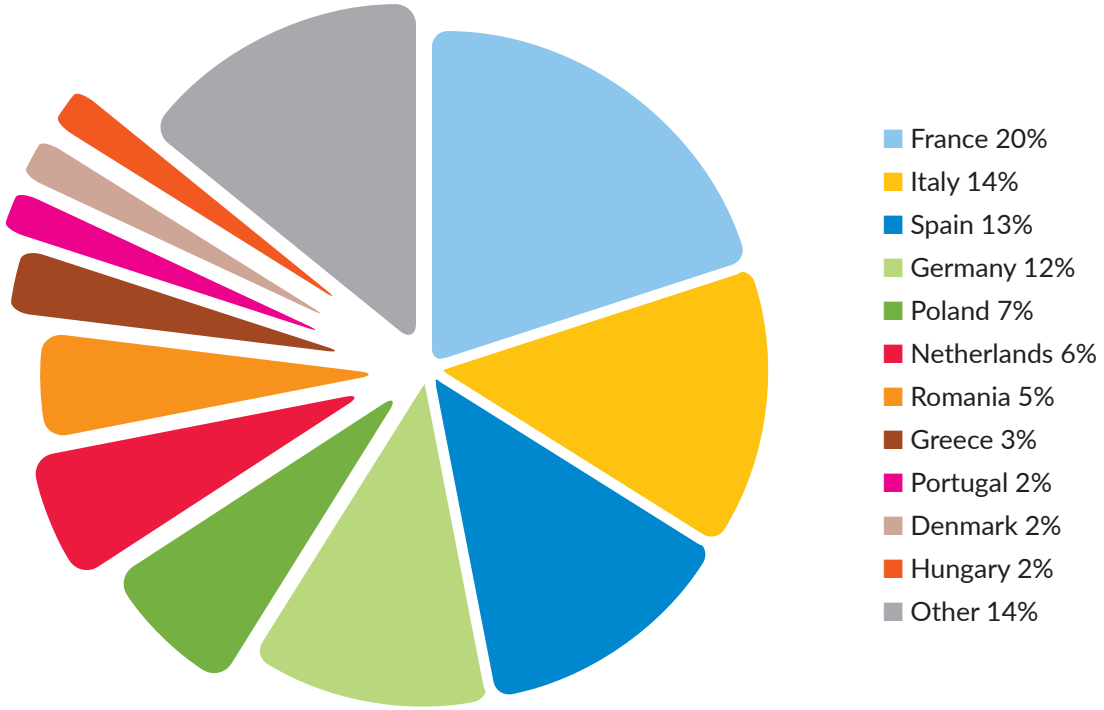
Figure 2.3 *Proportion of Animal Output by Country in EU27, 2022*



Source: *European Accounts for Agriculture*

Looking at crop production in the EU, the largest proportion comes from France at 20%, followed by Italy at 14%, Spain at 14% and Germany at 12%, the top four countries combining to account for 59% of crop output in EU27 during 2022. Ireland ranks in 19th position for crop output in EU27, accounting for just 0.8% of total output.

Figure 2.4 *Proportion of Crop Output by Country in EU27, 2022*



Source: *European Accounts for Agriculture*

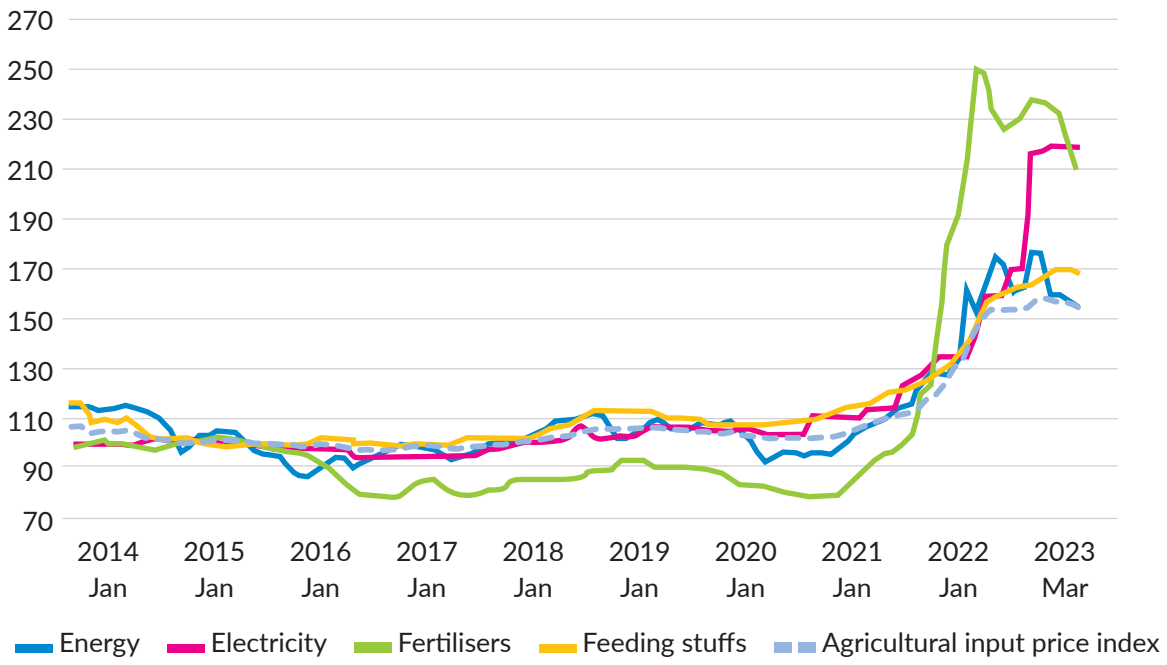
2.3 Agricultural Price Index

The agricultural output price index measures trends in the price of agricultural produce sold by farmers. The agricultural input price index is designed to measure trends in the price of farm inputs purchased for current consumption. When the input and output price indices are examined together, it gives an indication of the movement in the margin for profit. As with any index, a base year is chosen when the prices are set at 100. Subsequent years can be compared relative to the base year.

Agricultural Input Price Indices

Figure 2.5 highlights the monthly input price index between January 2014 and March 2023. The main feature up to mid-2021 was that fertiliser index was below 100 since late 2016, indicating that fertiliser was relatively cheap compared to 2015, when the index was set at 100. However, from January 2021 when the index for fertiliser was close to 80, it began to rise and it rose rapidly for a year or so, reaching a high of 251 in April 2022, indicating that the price had tripled over that 15-month period. While it has fallen from its high of 251, the drop has been much slower than the rise. In March 2023, it was at 210, indicating the price of fertiliser has fallen by 16%, but it is still 163% higher than it was in January 2021.

Figure 2.5 *Agricultural Input Monthly Price Indices, Jan 2014 – March 2023 (Base 2015=100)*



Source: *CSO*

Over the seven-year period between January 2014 and December 2020, the fertiliser index had gone between a high of 102 (in Q2 2015) and a low of 79 (in Q4 2016 & Q3 2017), a range of 23 points. In contrast, over an eight month period between September 2021 and April 2022 it rose from 104 points to 251 points, up by 147 points or by more than 140%.

There has been significant increase in the price of other agriculture inputs over the same period but not to the same extent. Electricity index rose from 110 points in January 2021 to a high of almost 220 points in Q4 2022 and Q1 2023, an increase of 100% over that time period.

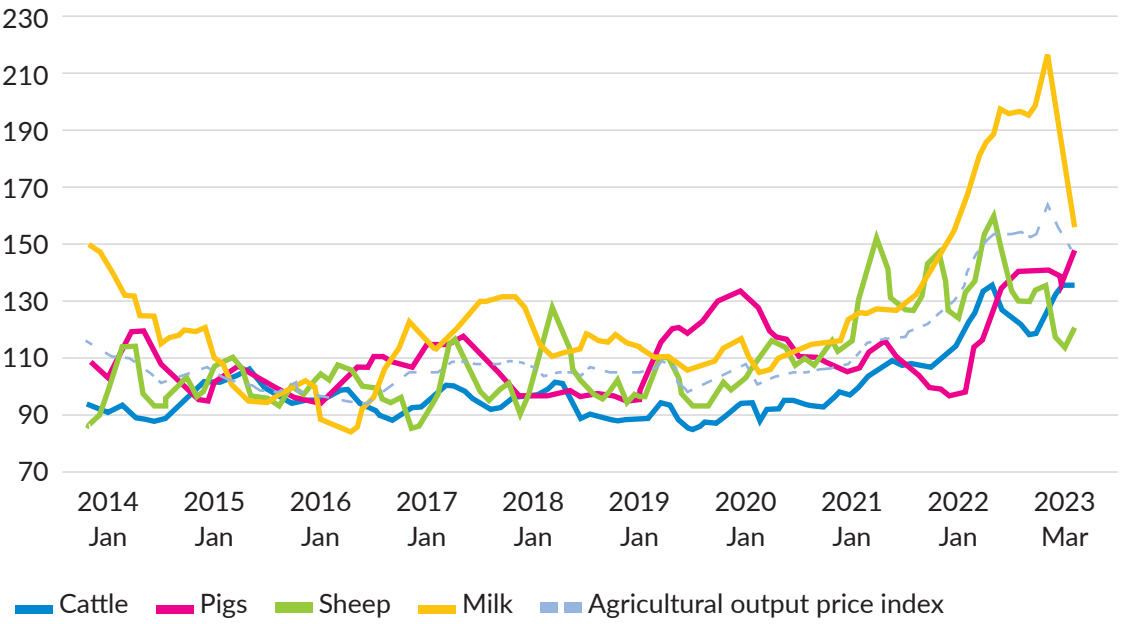
While input prices have stabilised in the first half of 2023, they are still well above the prices in early 2021 and indications are that they will drop far slower than they rose. Fertiliser in March 2023 was 165% higher than in January 2021, while electricity was 100% more expensive and feeding stuffs were about 51% more expensive.

The input price index covers all inputs for agriculture. Items such as veterinary expenses, plant protection products and maintenance of materials and buildings did not have the same dramatic increases as fertilisers, energy and feed and this is reflected in the dashed line in figure 2.5.

Agricultural Output Price Indices

On the other side, the price of agricultural outputs has also increased but not to the same extent. The price of milk paid to farmers saw the largest increase. Before January 2021 it was on an upward trend, having risen from 105 points in April 2020 to 115 points in January 2021, up 9.5%. It then continued its rise at a faster pace and reached 218 points in December 2022, up 90%, before dropping to 156 points in March 2023, down 28%. Milk is at 156 points on the index in March 2023, which is less than 5% higher than it was in January 2014 over eight years earlier.

Figure 2.6 *Agriculture Output Price index, Jan 2014 - March 2023 (Base 2015=100)*



Source: *CSO*

The table below highlights these longer-term changes and while outputs have generally increased by between 35% and 40%, inputs over the same period have increased by over 50%.

Table 2.1 *Change in Price Index for Agriculture Inputs and Outputs Between January 2021 and March 2023*

Agriculture Inputs	2021 Jan	2023 March	Change
Input price index	103	155	50%
Energy	98	156	59%
Electricity	110	219	99%
Fertilisers	79	210	165%
Feeding stuffs	112	170	51%
Agriculture Outputs			
Output price index	107	146	37%
Cattle	98	136	39%
Pigs	106	147	39%
Sheep	112	120	7%
Milk	115	156	36%

Source: CSO

Terms of Trade

The agricultural terms of trade index is the output price index expressed as a percentage of the input price index (all percentage changes have been calculated on actual figures before the index is rounded to one decimal place). The terms of trade indicate the trend in the level of margin that is available to the farmer. Over the past seven years, since 2015, the terms of trade have fallen in 2016, 2018, 2019 and 2022, indicating that there was a smaller level of margin than in the previous year. In 2017, 2020 and 2021, the terms of trade increased and in these three years farm incomes tended to rise.

The terms of trade in 2022 compared to 2021 is negative, -6.2%, indicating that there is a smaller margin available to the farm in 2022. This is because the input index rose by more than the output index, 34.7% compared to 26.4%.

Table 2.2 *Annual Terms of Trade, 2015 – 2022 Base 2015 = 100*

	2015	2016	2017	2018	2019	2020	2021	2022	Change 2020/2021
Output	100.0	95.1	106.5	104.4	103.3	104.0	116.0	146.7	26.4%
Input	100.0	97.9	98.2	102.7	105.0	102.2	111.6	150.3	34.7%
Terms of Trade	100.0	97.2	108.4	101.6	98.3	101.7	103.9	97.5	-6.2%

Source: CSO

2.4 National Farm Survey – Preliminary results 2022

The Teagasc National Farm Survey (NFS) has been conducted on an annual basis since 1972. The survey is operated as part of the Farm Accountancy Data Network (FADN) of the EU and fulfils Ireland's statutory obligation to provide data on farm output, costs and income to the European Commission. A random, nationally representative sample is selected annually, in conjunction with the Central Statistics Office (CSO), to represent those farms with greater than €8,000 of Standard Output. Each farm is assigned a weighting factor so that the results of the survey are representative of the national population of farms. These preliminary results are based on a sample of 700 farms, which represents 85,000 farms nationally.

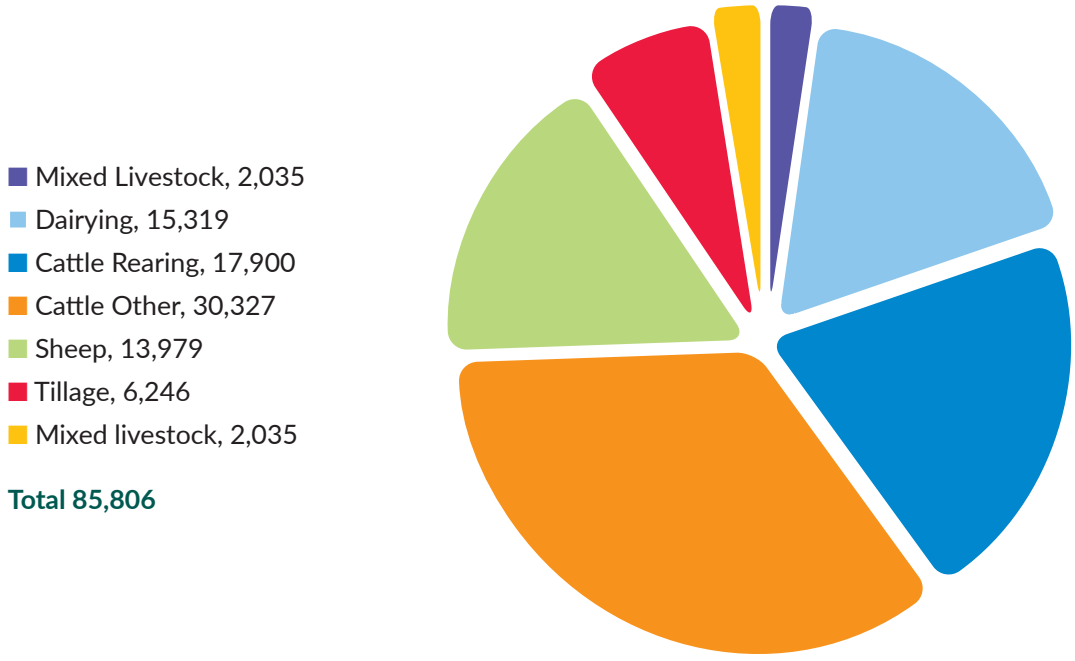
Standard Output

The Standard Output of an agricultural product is defined as the average monetary value of the agricultural output at farm-gate prices. Standard Output is not a measure of farm income. It does not take into account costs, direct payments, value added tax or taxes on products.

Farms are assigned to five main farm systems, on the basis of farm gross output, as calculated on a standard output basis. The NFS farms are categorised into one of five main farm types:

(i) Dairy
(ii) Cattle Rearing, which comprises farms that are mainly specialised in suckler beef production
(iii) Cattle Other, which comprises mainly of beef finishing farms, but also includes farms selling store cattle
(iv) Sheep
(v) Tillage.

Figure 2.7 *Number of farms by Farm System included in NFS 2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Some data on Mixed Livestock farms is also available, representing about 2% of the farm population. Given that individual farms typically have more than one farm enterprise, a rigorous basis for categorising farms into each system is required. "Farm system" or "type" refers to the dominant enterprise in each group. For example, the cattle rearing system refers to those farms where the greater proportion of the farm's activity relates to suckler beef production. There are many other farms (including those in the dairy, sheep and tillage systems) that have a cattle enterprise. The mixed nature of Irish farms is reflected in the individual contribution of livestock and crop categories to gross output.

Farms below the €8,000 standard output threshold are not included in the annual survey sampling frame but data is collected on those through the Teagasc Small Farms Survey, which is less frequently, the most recent results available are for 2015.

Family Farm Income (FFI)

FFI is calculated in the Teagasc National Farm Survey by deducting all farm costs (direct and overhead) from the value of farm gross output. Unpaid family labour is not included as a cost. FFI therefore represents the financial reward to all members of the family, who work on the farm, for their labour, management and investment. It does not include income from non-farming sources and thus may not be equated to household income.

Factors Influencing FFI

There are numerous factors which have an influence on FFI and many of these are outside the control of the farmer. In any one year, weather can have a significant impact on FFI. For example, in 2018, there was a cold, wet spring with snow in many parts of Ireland in early March. This was followed by a hot, dry summer, resulting in lower yields for many crops including grass and additional feed costs on many farms resulting in a fall in average FFI of 20% in that year. However, FFI did not fall on all farms in 2018 as, despite lower yields, tillage farms saw their FFI increase due to higher prices.

Over the past ten years since 2013 average FFI has fallen in three years, held steady for one year and increased in six of the ten years. However, 2021 is the only year in the past ten years where every sector saw an increase in FFI.

The agri-food sector is globally orientated, with approximately 90% of Irish beef, sheepmeat and dairy produce exported each year, and prices received are heavily influenced by world market prices. Over 40% of beef exports go to the United Kingdom, with a further 45% going to the EU. Therefore, the price our farmers receive for their beef will be influenced by the price that customers in the United Kingdom and the EU are prepared to pay. If farmers in the United Kingdom or the EU, or indeed any country around the world, produce beef of a similar quality at a lower price, this can have a knock on effect on Irish beef prices.

The average farm size and the quality of the land the farmer farms influences FFI significantly. Tillage and dairy farms tend to be based on the better-quality lands. They are also on average about twice the size of the average cattle rearing or cattle other farms. The average dairy farm in 2022 NFS was 65 hectares in size, with the average tillage farm 71 hectares, while the average cattle farm was closer to 34 hectares. When comparing average FFI on a dairy farm with a cattle other farm, the dairy farm FFI is almost eight times higher. However, comparing FFI per hectare, the dairy farm is about four and a half times greater than on cattle other farms.

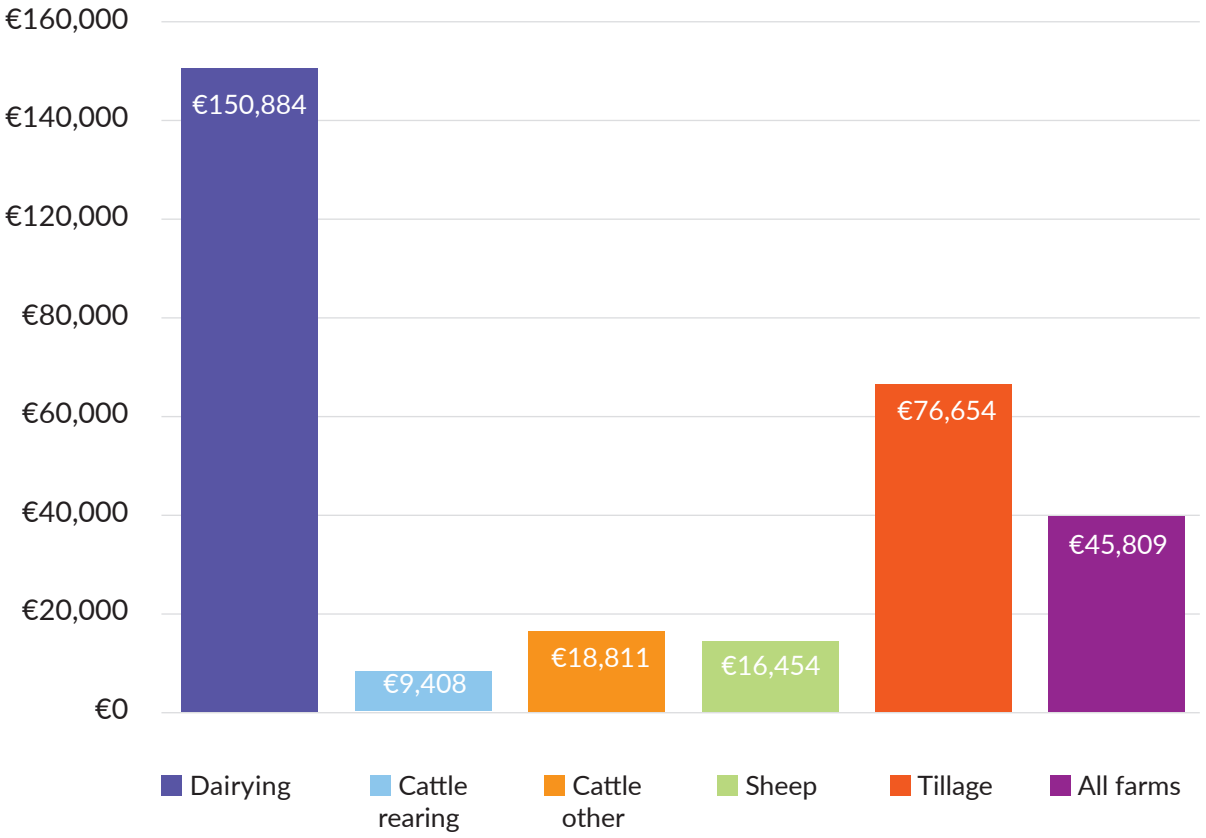
National Farm Survey Preliminary Results, 2022

The preliminary results for the 2022 National Farm survey issued in June 2023 shows that the average FFI for 2022 was €45,809, a 32% increase on 2021 figures. The average FFI has increased each year for the past four years from €24,213 in 2018 to €24,804 in 2019 to €27,241 in 2020, €34,367 in 2021 and to €45,809 in 2022. Over this period since 2018 the average FFI has increased by 89% from €24,213 to €45,809 but this average has been driven by very large increases in dairy farm FFI with more modest increases in other farm types.

Dairy farm FFI increased by 138% between 2018 and 2022 or by €87,541 to €150,884. Tillage farm FFI increased by 84% from €41,589 to €76,654 in 2022. However, on cattle and sheep farms the increase in FFI was much more modest with average increase closer to 20%. Cattle rearing FFI saw the smallest increase at €1,081 over the four years from €8,327 to €9,408, sheep farm FFI rose by €3,020 from €13,434 to €16,454, while cattle other FFI increased by €3,755, or from €15,056 in 2018 to €18,811 in 2022.

In 2022 FFI income increased on dairy, tillage and cattle other farms, while it fell by 13% on cattle rearing farms and by 21% on sheep farms. Higher output prices for milk and grains were the main driver of the increase in average FFI. In general, farms experienced an increase in production costs, as key farm input prices for fuel, feed and fertiliser all rose in 2022. This followed increases in 2021 of about 25% in fertilisers and a 10% to 15% increase in feeding stuffs and energy. The increasing cost of farm inputs continued in 2022 with the cost of fertiliser increasing by over 120%, feeding stuffs up by 30% and energy up by over 40%. Most input costs peaked in late 2022 with prices stabilising and reducing somewhat soon after.

Figure 2.8 *Family Farm Income by Farm Type in 2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Dairy system production costs rose by 32% in 2022 but significantly higher milk prices, up by 47%, resulted in a record average dairy farm income of just under €151,000, an increase of 53%, or over €52,000 on the 2021 level.

In the cattle rearing system, which is made up of farms that are mainly specialised in suckler beef production, costs increased by 13% in 2022, despite large reductions in the volume of fertiliser used and some reductions in the volume of concentrate feed used. However, the value of output on cattle rearing farms increased in 2022 by 6%, mainly due to higher cattle prices. The value of support payments for cattle rearing was down 5% in 2022. Overall, the average cattle rearing FFI was just over €9,400 in 2022 down over 13% or close to €1,500 compared with the 2021 level.

In the cattle other system, which comprises mainly of beef finishing farms, but also includes farms selling store cattle, production costs increased by 31% in 2022. With support payments up 3% and the value of farm output up by 25% mainly due to higher cattle prices, this resulted in an average income of €18,800, an increase of 9%, or over €1,500, compared with the 2021 level.

Production costs rose on sheep farms in 2022 by 24%, largely due to higher prices for feed and fertiliser, as well as higher overhead spending. The sector experienced a 9% increase in the value of farm output. On average, the level of direct payments for sheep farms was down 4%. The average income on sheep farms was close to €16,500 in 2022, a decrease of 21%, or €4,300 relative to the record 2021 level.

For the second year in a row higher fertiliser, feed and contracting charges saw production costs on tillage farms increased by over 30%. However, the average income on tillage farms rose by 32%, or almost €19,000 in 2022 to reach almost €77,000. This was because tillage farms experienced particularly good production conditions in 2022, which led to good crop yields. Substantially higher cereal prices in 2022 also helped to boost the value of farm output, which increased by 32%.

Distribution of FFI and Farm Holdings

An analysis of the Teagasc National Farm Survey shows that 38% of farms have a FFI of less than €10,000 in 2022. Fifteen percent of farms have a FFI of greater than €100,000, compared with just 5% in 2020. On cattle rearing farms 65% of farms have a FFI of less than €10,000, while on dairy farms 62% have a FFI of greater than €100,000.

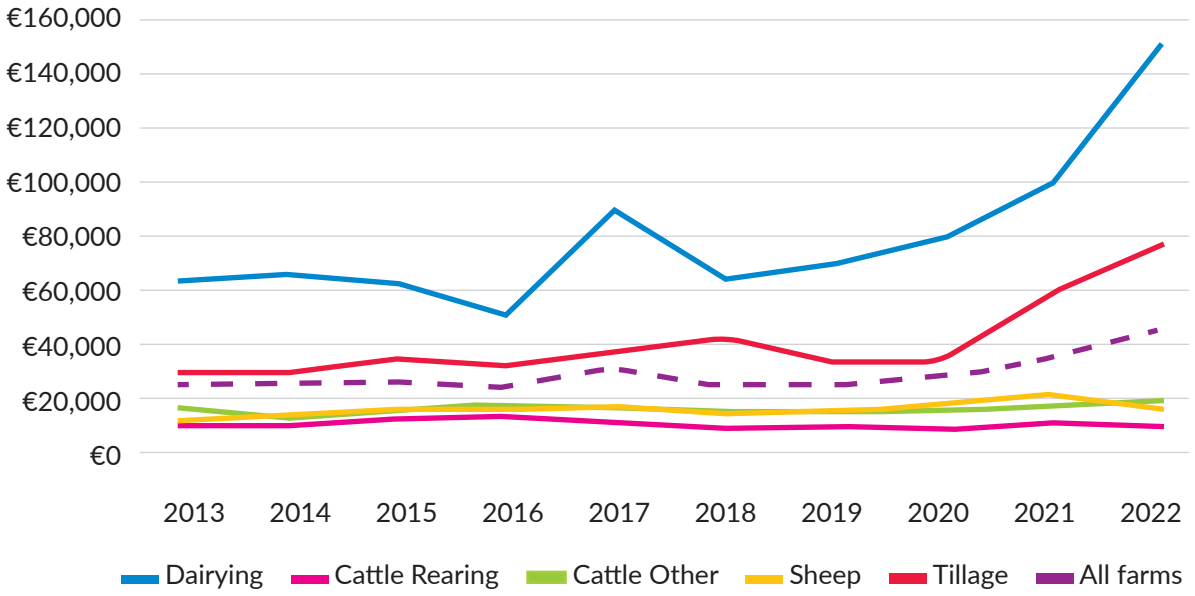
Almost 60% of the aggregated FFI is returned on dairy farms despite the fact that they represent just over 18% of all farms in the survey. Cattle rearing and cattle other farms represent 56% of all farms, yet they return just 19% of aggregated FFI.

According to the Teagasc survey, there are 15,319 dairy farms and 72% of these are in the Southern region of the country, which includes all six Munster counties along with Wexford, Kilkenny and Carlow. Sheep farms are concentrated in the Northern and Western region, which covers the five Connacht counties along with Donegal, Cavan and Monaghan, with 8,439 sheep farms or 60% of the total. In contrast there are just 92 tillage farms in the Northern and Western region out of a total of 30,995 farms in the region. The Eastern and Midland region which comprises Louth, Meath, Dublin, Kildare, Wicklow, Laois, Longford, Offaly and Westmeath has the smallest number of farms at 16,738 with 2,457 tillage farms. Overall, 44% of all farms are in the Southern region, 36% in the Northern and Western region and the balance of 20% in the Eastern and Midland region.

FFI volatility and Direct Payments

Over the last 10 years, the average FFI has increased from €25,436 in 2013 to €45,809 in 2022, an increase of 80%. However, the increase has not been even over the years, as can be seen in figure 2.9. FFI on dairy farms, for example, increased by 73% in 2017 but that followed decreases in 2015 and 2016. In 2018, FFI on dairy farms dropped by 30%. This highlights the volatile nature of FFI, and faming income generally, which can vary significantly from year to year.

Figure 2.9 *Family Farm Income by Farm Type, 2013-2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

While cattle rearing FFI is the lowest over the years, it has gone from around €9,500 in 2013 to a high of €12,660 in 2015 to a low of €8,327 in 2018 and back to close to €9,500 in 2022, similar to what it was ten years earlier. While FFI on cattle and sheep farms varies over the years, it is not as volatile as on tillage and dairy farms. The lower level of FFI volatility on cattle and sheep farms is partially due to the level of direct supports these farm types receive.

Table 2.3 *Direct Payments as Proportion of FFI*

2022	Dairying	Cattle Rearing	Cattle Other	Sheep	Tillage	All Farms
% of farms represented	18%	21%	37%	17%	7%	100%
Direct Payments	€21,346	€14,309	€16,183	€18,092	€29,121	€18,274
FFI	€150,884	€9,408	€18,811	€16,454	€76,654	€45,809
DPs as % of FFI	14%	152%	86%	110%	38%	40%

Source: *Teagasc, National Farm Survey – Preliminary results 2022*

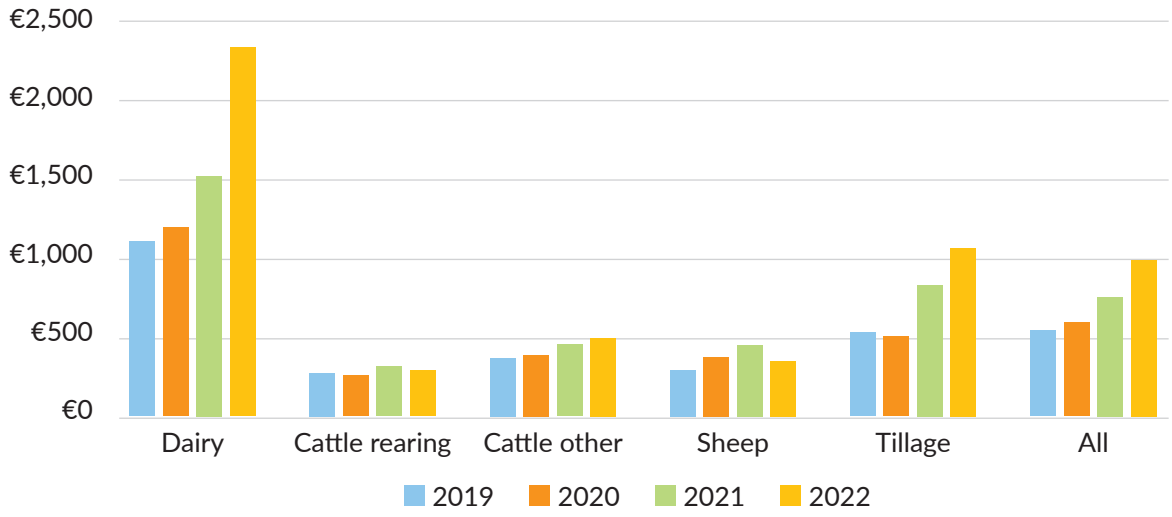
> *While FFI on cattle and sheep farms varies over the years, it is not as volatile as on tillage and dairy farms.*

In 2022, direct payments accounted for 110% of sheep FFI and 152% of cattle rearing FFI. This indicates that on sheep and cattle rearing farms a portion of the monies received in direct payments was used as compensation for losses on farm output. In contrast, just €14 in every €100 of FFI on dairy farms was provided by direct payments. The high percentage of direct payments included in FFI on cattle and sheep farms ensures that even in lean years there will be a basic level of FFI.

Family Farm Income by Farm Type per Hectare

The average farm size included in the Teagasc National Farm Survey in 2022 was 45 hectares, with average income per hectare coming in at just over €1,000; up from just under €800 in 2021. The lowest FFI per hectare was on cattle rearing farms at €301 per hectare and they also had the smallest average farm size at 31 hectares. In contrast cattle rearing farms received the highest direct payments per hectare at €462, compared with an average of €406. Dairy farms generate average FFI of €2,332 per hectare, close to eight times that of cattle rearing, yet they receive €132 per hectare less in direct payments at €330 per hectare. Cattle other farms, which tend to be 37 hectares on average, generate FFI of €506 per hectare, while sheep farms, on average eight hectares larger, generate a FFI of €366 per hectare. Tillage farms in 2022 generated FFI of €1,087 per hectare, with €406 of that FFI due to direct payments. Tillage farms have the largest average farm size at 71 hectares.

Figure 2.10 *Family Farm Income per Hectare, 2019 -2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Off farm Employment Income, 2022

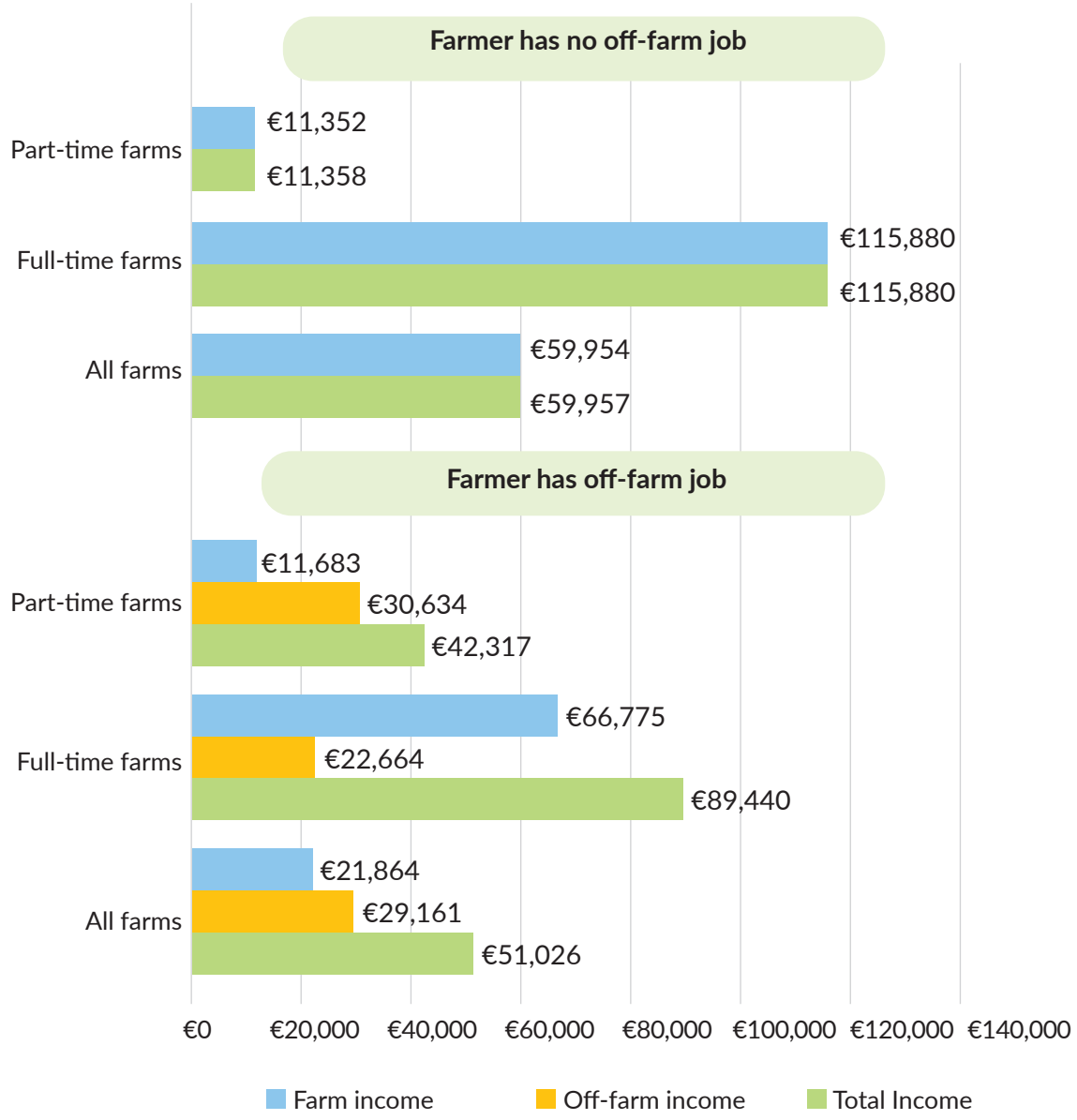
According to the Teagasc National Farm Survey (NFS), in 81% of farm households either the farmer and/or spouse has an off-farm job and/or another income from pension or social assistance. Therefore, just less than one in five farm households rely fully on their farm as their only source of income.

In the NFS, a farm is classed as full-time or part-time based on the standard labour units required to operate the farm, as calculated on a standard man day basis. This results in many farms classified as part-time, yet the farmer may have no other employment source. On average, part-time farms which have no off-farm job have an average income of €11,352. The average full-time farm, where the farm holder or spouse does not have an off-farm job, has an income of €115,880.

Many farm holders regarded as full-time (based on the standard labour units required to operate it) may also have an off-farm job. Their average income is €89,440, of which €66,775 is from farming activities and the balance from the off-farm job.

On those farms where the farmer has no off-farm job, the average income on the farm is €59,957. While on the farms where the farmer has an off-farm job, the average income drops to €51,026. In 2021 the farmer with an off farm job had a higher total income than those with no off-farm job but with the significant increase in dairy farm incomes, most of whom are full time farmers, this has been reversed in 2022.

Figure 2.11 *Source of Income on Farm Households 2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

About 57% of farm households had a source of off-farm employment income in 2022, up from 53% in 2021 and 52% in 2020. The proportion of farm households where the spouse was employed off-farm rose from 36% in 2021 to 41% in 2022, while the proportion of farmers employed off-farm was slightly less, at 37%, up from 33% in 2021.

The off-farm employment situation differs by system, with cattle and sheep farmers most likely to work off-farm at 44%. The proportion of tillage farmers employed off farm increased from 35% in 2021 to 42% in 2022. Although a very low proportion of dairy farmers at 10% work off-farm, 56% of dairy farm households have an off-farm employment income as a high proportion of spouses work off-farm on dairy farms.

Full and Part Time Farms, 2022

According to the preliminary results of the 2022 NFS, a little over one third of farms are full-time farms and just less than two thirds are part-time farms. A significant difference between the two groups of farms is the average utilisable agricultural area (UAA) farmed. Full-time farms have an average of 74 hectares while part-time farms have less than half that amount of land, at 29 hectares. The availability of land and whether the farm is full-time or part-time are significant factors on FFI. Full-time tillage farms have the largest farms on average, at 119 hectares, while part-time dairy farms have an average farm size of 20 hectares, about one sixth the size.

Full-time farms have a FFI in 2022 of over €106,000, while part-time farms have an average FFI of around €11,500 or about 11% of the full-time farm. Part-time cattle rearing farms have an average FFI of €7,000, while full-time dairy farms have an average FFI of €158,600, more than twenty times greater.

Subsidies and Direct Payments, which contribute to FFI on all farms, are particularly important on part-time farms, where they contribute 108% of the FFI, meaning that without these payments, the farm would be making a financial loss. While they are also important on full-time farms, they contribute far less proportionately to the average FFI at 27%.

Table 2.4 *Main results from National Farm Survey for Full-time and Part -time farms, 2022*

System	Dairying	Cattle Rearing	Cattle Other	Sheep	Tillage	Mixed Livestock	All Sizes
Full-Time Farms							
Per Cent of Population	16.8	2.2	7.5	3.8	3.2	2.3	36.0
U.A.A (ha)	67.5	54.5	67.2	90.1	119.3	70.8	74.0
Family Farm Income	€158,613	€29,581	€44,326	€43,223	€125,726	€84,341	€106,543
Subsidies and Direct Payments	€22,213	€27,746	€29,640	€40,030	€46,100	€29,123	€28,641
DPs % of FFI	14%	94%	67%	93%	37%	35%	27%
Part-Time Farms							
Per Cent of Population	1.0	18.6	27.7	12.4	4.0	0.0	63.9
U.A.A (ha)	19.7	28.6	29.1	30.9	30.5	0.0	29.2
Family Farm Income (€)	€26,954	€7,020	€11,870	€8,112	€36,429	€0	€11,509
Subsidies and Direct Payments (€)	€7,452	€12,718	€12,522	€11,256	€15,204	€0	€12,418
DPs % of FFI	28%	181%	105%	139%	42%	0%	108%

Source: *Teagasc, National Farm Survey – Preliminary results 2022*

2.5 Farm Viability Analysis, 2022

The main results of the Teagasc NFS relate to the FFI for the various farm systems. While FFI is a useful measure, it does not account for the economic viability of the farm business, nor does it make any allowance for the role of income earned outside of the farm in determining the sustainability of farm households. To help address this, the NFS also provides a viability profile of its farms broken into three categories viable, sustainable and vulnerable.

Viable

A farm is defined as economically viable if the farm income can remunerate family labour at the minimum wage and provide a 5% return on the capital invested in non-land assets.

Sustainable

If the farm business is not viable, the household is still considered sustainable if the farmer or spouse has an off-farm income.

Vulnerable

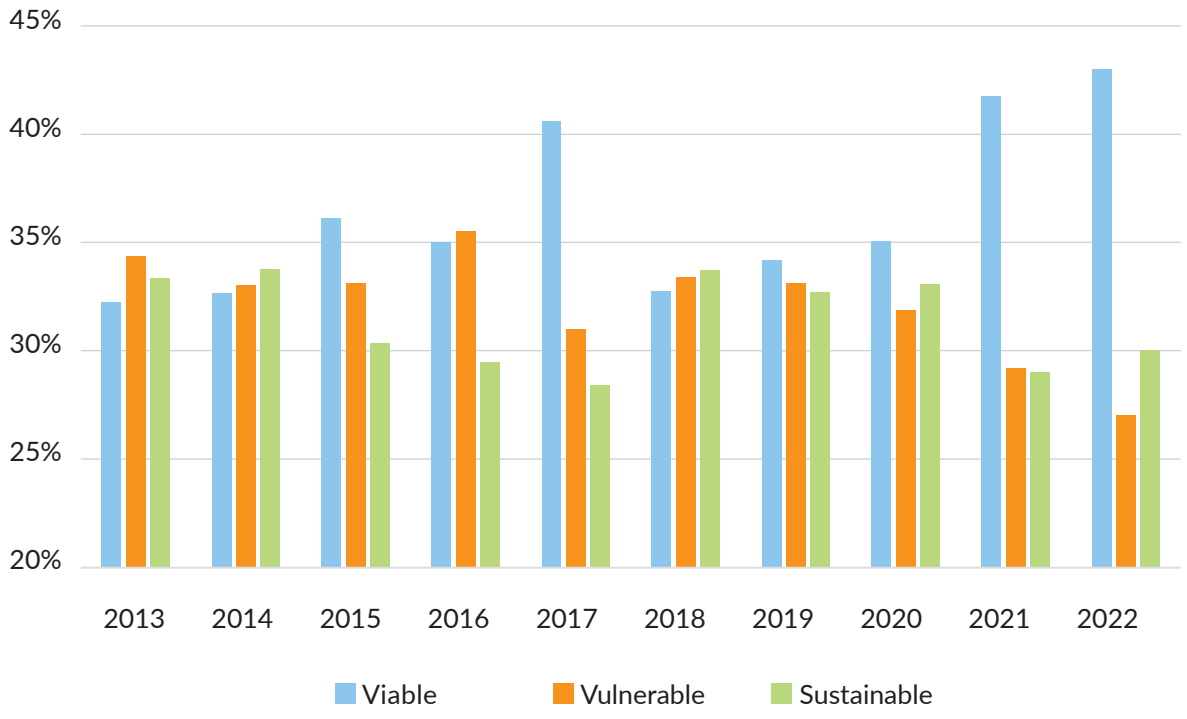
A farm is considered to be economically vulnerable if the farm business is not viable and if neither the farmer nor spouse works off the farm.

In the 2022, the NFS preliminary results outlines that 43% of farms were viable, up 1% on the previous year. Over the past ten years, in the years 2022, 2021 and 2017, over 40% of the farms in the NFS were classified as economically viable. For the other seven years, the number of viable farms was between 32% and 36%. In 2022, 2021 and 2017, FFI increased by close to 30% in each, while in four of the years the maximum increase was 10%, with decreases in three years.

The number of vulnerable farms tend to reduce when the number of viable farms increases. This is borne out by the fact that 2022 saw the lowest percentage of farms in this category over the last decade at 27%. This is 2% points better than 2021 when it was 29%, while in the years previous to 2021 it generally ranged between 32% and 36%.

Similarly, the number of sustainable farms drops slightly in years when FFI is relatively high, as those farms where neither the farmer nor spouse has an off-farm income see an increase in FFI, moving them into the viable category.

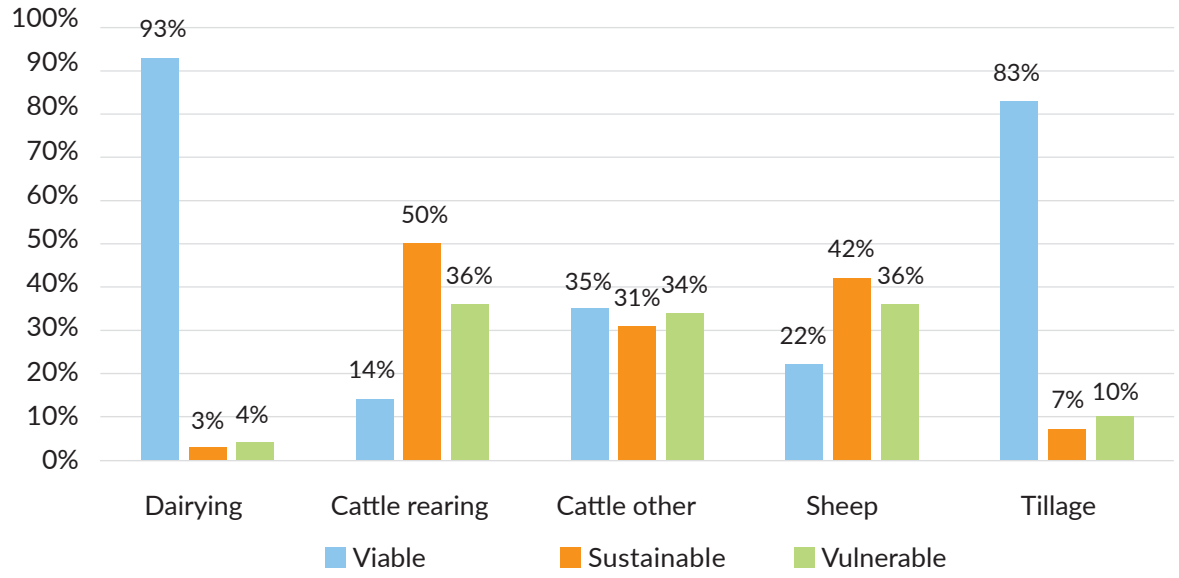
Fig 2.12 *Farm Viability 2013 to 2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

The viability of Irish farms varies significantly across systems. In 2022, 93% of dairy farms were found to be viable, up from 80% just two years earlier. Tillage has also seen an increase in the proportion of viable farms in 2022 to 83%, up from 67% in 2020. Cattle other farms which saw their FFI increase to €18,811 in 2022, have 35% of their farms considered as viable. However, sheep farms and cattle rearing farms, which both saw their FFI drop in 2022, have only 22% and 14% respectively considered as viable. In fact, 36% of cattle rearing farms and sheep farms are considered as vulnerable while just 4% of dairy farms are in this category.

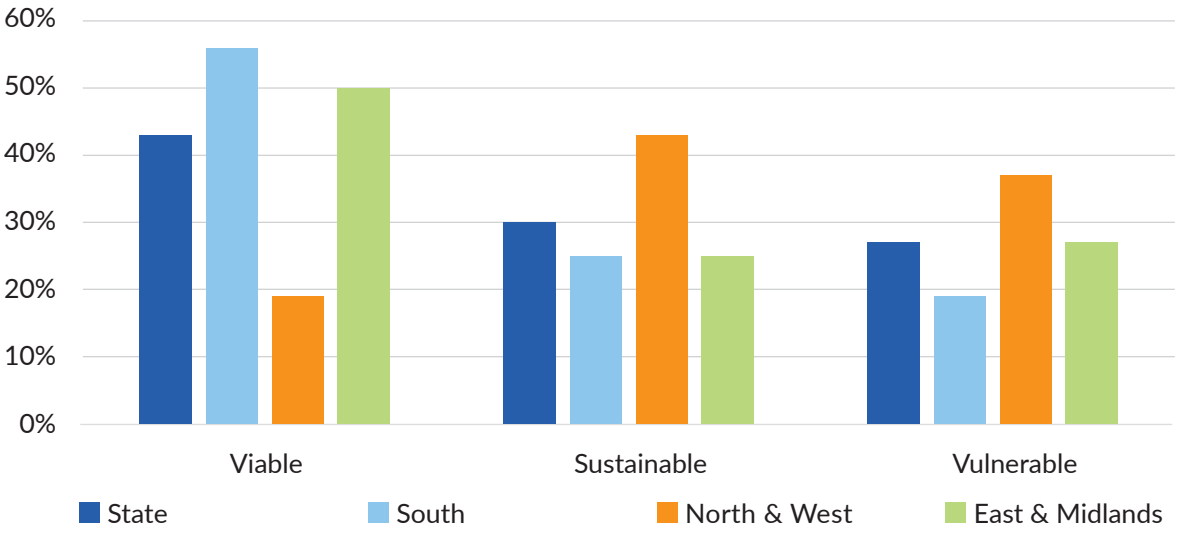
Figure 2.13 *Viability of Farms by System, 2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

As outlined earlier, the cattle and sheep farms tend to be smaller than the dairy and tillage farms and this is reflected in the viability of the farms. According to these results, there are 23,000 vulnerable farms down from over 30,500 in 2020. These include 16,755 vulnerable cattle farms nationwide, about 5,000 vulnerable sheep farms and 1,225 vulnerable dairy and tillage farm combined. It should be noted that the NFS does not include about 50,000 farms with a standard output of less than €8,000. These smaller farms are included occasionally in the NFS, the last time was in 2015, and at that time half of the small farms were found to be vulnerable.

Figure 2.14 *Viability of Farms by Region, 2022*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Looking at viability of farms on a regional basis, the Northern and Western region has the lowest proportion of viable farms at just 19%, while the proportion in the Southern region is 56% and in the Eastern and Midland region it is 50%. Thirty-seven percent (or almost 11,500 farms) in the Northern and Western region fall into the vulnerable category, with only 19% or 7,100 in this category in the Southern region.

2.6 Social Sustainability

Along with the NFS each year, Teagasc also issue the Teagasc National Farm Survey Sustainability Report, based on detailed analysis of data collected through the Teagasc National Farm Survey. In the latest report released in October 2022 Teagasc measure the Economic, Social, Environmental and Innovation sustainability dimensions for Dairy, Cattle, Sheep and Tillage farms in 2021. Earlier in this chapter there was analysis of the economic data from the preliminary results of the NFS 2022 and in chapter eight, details of the environmental and innovation sustainability are examined. The social sustainability element is examined here.

A farm will only be sustainable if employment in agriculture can provide a suitable economic return for the labour employed, but also if farm operators and families have an acceptable quality of life from their farming and non-farming activities. If farming is not socially sustainable, individuals may exit the sector, or there may be a lack of new entrants to farming, with fewer younger people willing to take over farms when older farmers retire. In addition, as agriculture is often the predominant economic activity in many rural areas, the social impacts of a viable farming sector are also important in maintaining employment and social well-being in the broader rural community. The design of social sustainability indicators is subjective in nature. Based on the data available from the NFS, Teagasc report on the following indicators by farm type:

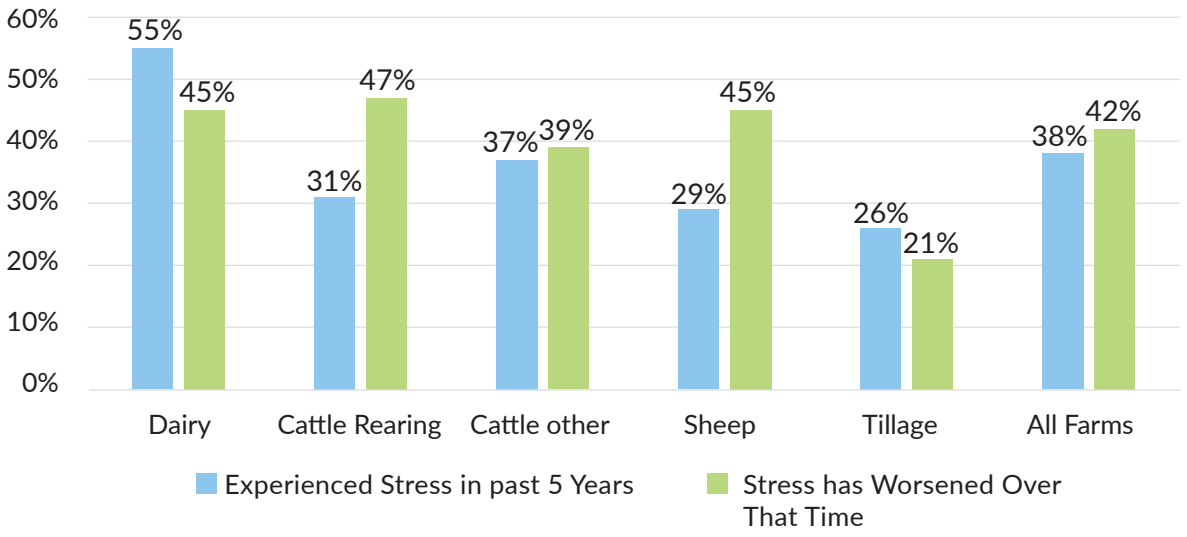
- Household vulnerability
- Agricultural education
- Isolation risk
- High age profile
- Hours worked on-farm
- Total hours worked.

Household viability has been examined earlier in this chapter based on the 2022 preliminary NFS, while the age profile of farmers will be examined later in this chapter. Alongside the main Teagasc National Farm Survey Sustainability Report 2021, Teagasc released results of health and wellbeing and connectivity indicators.

Health and Wellbeing

Based on the Teagasc data, dairy farmers have experienced the highest levels of stress in the past five years with 55% experiencing stress. Less than half that proportion of tillage farmers have experienced stress, at 26%, while cattle and sheep farmers are in between. However, the proportion of farmers who indicated that farm business-related stress has worsened over the previous five years is at 42%. Again the proportion of tillage farmers in this category is lowest at 21%, while for sheep, dairy and cattle rearing farmers the proportion is at 45% to 47% and cattle other farmers are at 39%.

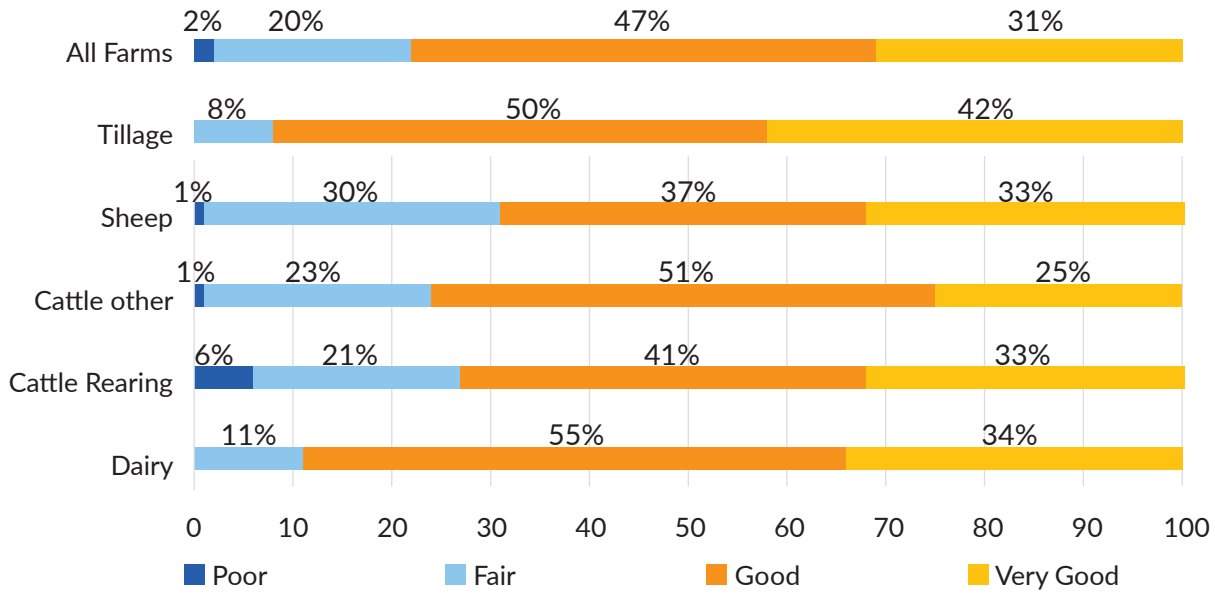
Figure 2.15 *Farm Business Related Stress 2021*



Source: *Teagasc*

Despite the high proportion of dairy farmers that experienced stress in the past five years, 89% report their health as good or very good. This is only exceeded by tillage farmers, where 92% report their health as being good or very good. Cattle farmers have about 75% in this category, with sheep farmers reporting the lowest proportion with good or very good health at 70%.

Figure 2.16 *Self-reported Farmer Health, by System 2021*

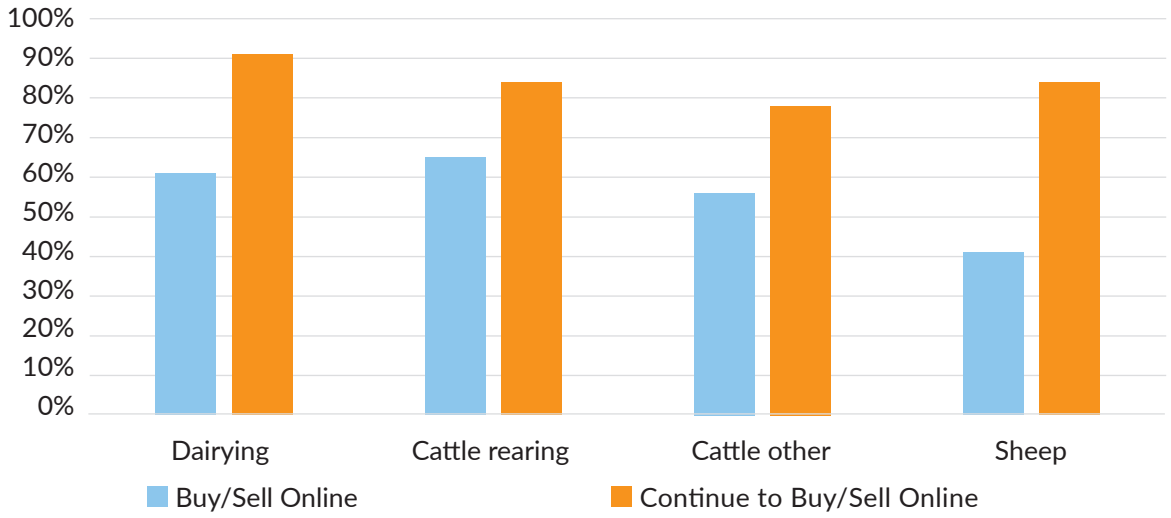


Source: *Teagasc*

Across all farms 22% of farmers reported their health as poor or fair, with this rising to 31% for sheep farmers and 27% for cattle rearing farmers, the two sectors with the lowest Family Farm Incomes.

Looking at connectivity, Teagasc found that more than 70% of farmers used smartphones in 2021, up from less than 40% in 2015. Dairy and Tillage farmers were top for using smartphones at 87% and 82% respectively, with cattle rearing farmers at 78% and sheep and cattle other farmers at close to 70%. Internet access across farm households was at 88% in 2021, up from 76% in 2011, with almost all dairy farm households having internet access at 97%. Cattle other households are lowest at 83% and sheep households are at 85%.

Figure 2.17 *Use of On-line Livestock Marts*



Source: *Teagasc*

During the COVID-19 pandemic most livestock marts began selling livestock on-line as numbers allowed into the mart premises was restricted. Farmers adapted quickly to the new technology for buying and selling livestock and as reported by Teagasc, around 60% of dairy and cattle farmers buy or sell livestock on-line, while the proportion of sheep farmers is at 41%. Interestingly, even though the restrictions on attending livestock marts have been lifted, 80% to 90% of farmers say they will continue to buy or sell livestock online.

2.7 Direct Payments to Farms

The Common Agricultural Policy (CAP) was created over sixty years ago in 1962 by the six founding countries of the European Communities and is the longest-serving EU policy. Its aim is to:

- provide affordable, safe and high-quality food for EU citizens,
- ensure a fair standard of living for farmers and
- preserve natural resources and respect the environment.

It is a dynamic policy which, through successive reforms, has adapted to new challenges faced by European agriculture. The EU has created and implemented the CAP to meet challenges such as:

- providing food security for all European citizens
- addressing global market fluctuations and price volatility
- maintaining thriving rural areas across the EU
- using natural resources in a more sustainable manner
- contributing to climate change mitigation.

The CAP is a common policy for all EU countries. It is managed and funded at European level from the resources of the EU's budget. Further details of the current CAP can be found in chapter seven.

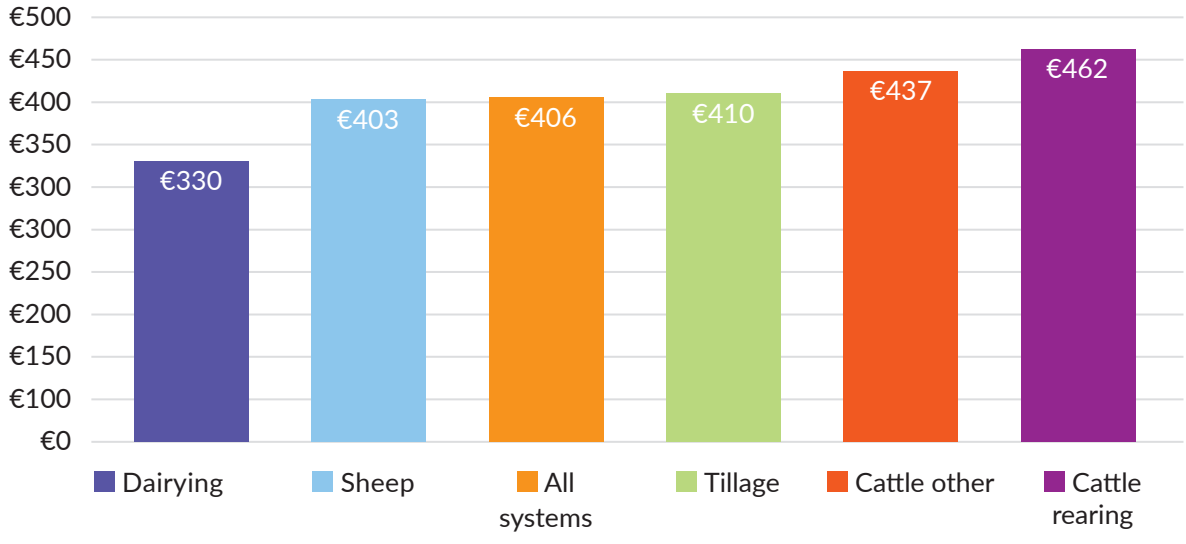
The EU provide €7.53 billion over the five year period of the current CAP, 2023 – 2027. Additional funding of €2.3 billion is provided by the national exchequer, providing total funding of €9.83 billion for the current CAP, or almost €1.97 billion each year.

Additional supports are provided in exceptional circumstances such as in 2022 when funding of €20 million for the pig and horticulture sectors was distributed. €15.8 million of this was funded from the EU's exceptional support package to support the farmers most impacted by the crisis following the illegal Russian invasion of Ukraine.

During the calendar year 2022, Irish farmers received around €2.02 billion in direct payments. The largest payment was the basic farm payment or BPS, which accounts for around €810 million. Most farmers are eligible to receive this, along with greening, which pays out around €370 million. ANC (Areas of Natural Constraint) payments were almost €247 million and GLAS (Green Low-Carbon, Agri-environment Scheme) payments were close to €179 million. Other schemes include BDGP (Beef Data and Genomics Programme, BEEP (Beef Environmental Efficiency Programme) and the SWS (Sheep Welfare Scheme), which combined paid out close to €84 million in 2022. The RBEAPP (Results-Based Environment Agri Pilot Project) scheme had payments of over €14 million, while organics payments were over €12 million. Other payments, such as forestry payments and TAMS (Targeted Agricultural Modernisation Scheme) amounted to over €140 million.

In 2022 exceptional payments were made to the pig and horticulture sectors of €20 million and the 2022 Fodder Support Scheme made payments of over €83 million.

Figure 2.18 *Direct Payments Per Hectare by Farm System 2022 Included in National Farm Survey*



Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Table 2.5 *Distribution of Basic Payment Scheme (BPS) & Greening Payments to Farmers by County, 2022*

County	Recipients per county	Total payments per county € Million	Average Payment per county €000
CARLOW	1,829	€24.65	€13.48
CAVAN	4,701	€33.75	€7.18
CLARE	5,986	€46.39	€7.75
CORK	12,938	€150.42	€11.63
DONEGAL	8,392	€60.28	€7.18
DUBLIN	822	€11.14	€13.55
GALWAY	11,925	€86.66	€7.27
KERRY	7,641	€69.88	€9.14
KILDARE	2,167	€30.28	€13.97
KILKENNY	3,257	€47.06	€14.45
LAOIS	2,596	€31.88	€12.28
LEITRIM	3,511	€22.47	€6.40
LIMERICK	5,012	€48.83	€9.74
LONGFORD	2,429	€19.09	€7.86
LOUTH	1,536	€18.25	€11.88
MAYO	11,080	€72.70	€6.56
MEATH	3,617	€46.85	€12.95
MONAGHAN	3,847	€26.19	€6.81
OFFALY	2,733	€29.84	€10.92
ROSCOMMON	5,363	€37.62	€7.02
SLIGO	3,898	€25.64	€6.58
TIPPERARY	6,929	€90.66	€13.08
WATERFORD	2,272	€34.60	€15.23
WESTMEATH	3,236	€32.63	€10.08
WEXFORD	4,218	€56.14	€13.31
WICKLOW	2,042	€26.49	€12.97
Total	123,977	€1,180.39	€9.52

Source: *DAFM*

Basic Payment Scheme

During 2022, around 124,000 farmers received a BPS and/or a Greening payment. The payments issued in 2022 generally relate to applications made in 2022, but some payments may relate to earlier years. Also, deductions may have been applied in 2022 for earlier years if the applications were not fully compliant with the relevant regulations.

The average payment nationwide is just over €9,500, but there is significant variation on a county-to-county basis. Farmers in Leitrim, Mayo, Sligo, Monaghan all received on average less than €7,000. In contrast, an average payment in Waterford, Kilkenny, Kildare, Dublin, Carlow, Wexford and Tipperary is greater than €13,000 per farmer, with payments per farm in Wicklow and Meath very close to the €13,000.

2.8 Farm Numbers and Size

The CSO carry out a national farm census every ten years, in line with their EU colleagues. They also carry out a farm structure survey three years and six years after the census. Data on animal housing and manure management and the farm labour force was collected in late 2020 and early 2021, via sample survey.

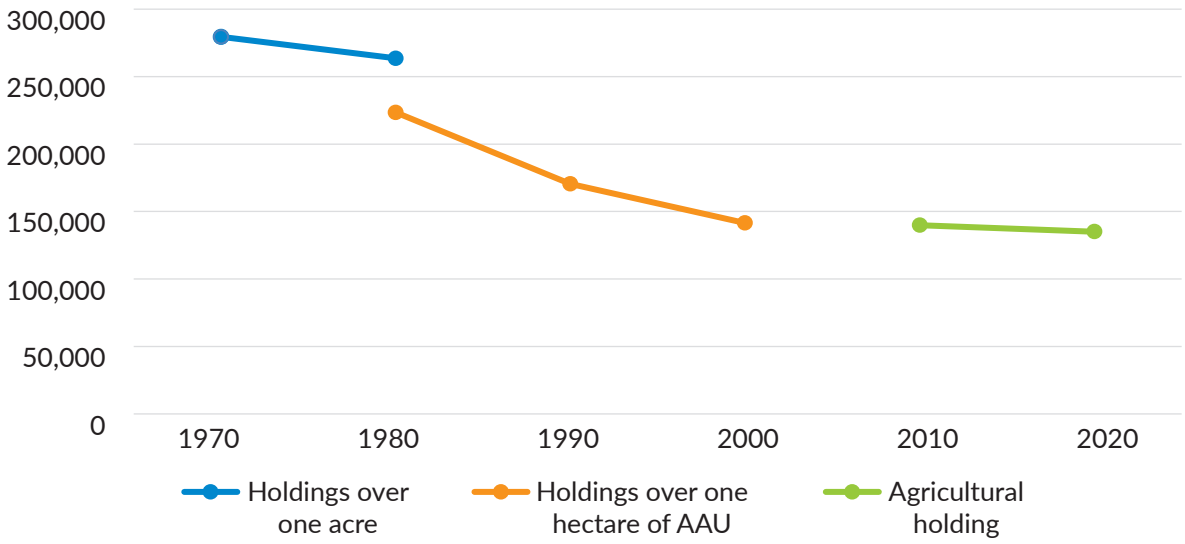
The Census of Agriculture (CoA) 2020 provides data on Irish farm numbers and demographics. In 2020 it was estimated that there were 135,037 farms in Ireland. Over the years the exact methodology for counting farms has changed a number of times. Up to 1980 the number of holdings over one acre was used when it changed to farms of at least one hectare of Agricultural Area Used (AAU). This saw the number of farms drop from 263,600 using the 'one acre' measurement to 223,500 farms under the 'one hectare of AAU' measurement. Since 2010 the CSO have defined a farm or holding as follows.

An "agricultural holding" or "holding" means a single unit, both technically and economically, which has a single management and which undertakes agricultural activities listed below within the economic territory of Ireland, either as its primary or secondary activity:

- growing of non-perennial crops
- growing of perennial crops
- plant propagation
- animal production
- mixed farming
- support activities to agriculture and post-harvest crop activities

This change in definition in 2010 allowed intensive holdings of less than one hectare of AAU to be included such as fruit or vegetable growers and this would have resulted in additional holdings to be included. However as can be seen in figure 2.19 the number of farms has been falling over the past 50 years since 1970, although the rate of decrease has slowed over the 10 years up to 2020. Between 2010 and 2020 the number of agriculture holdings has fallen from 139,860 in 2010 to 135,037 in 2020. This represents a drop of 4,823 agricultural holdings or an average decrease of 482 each year.

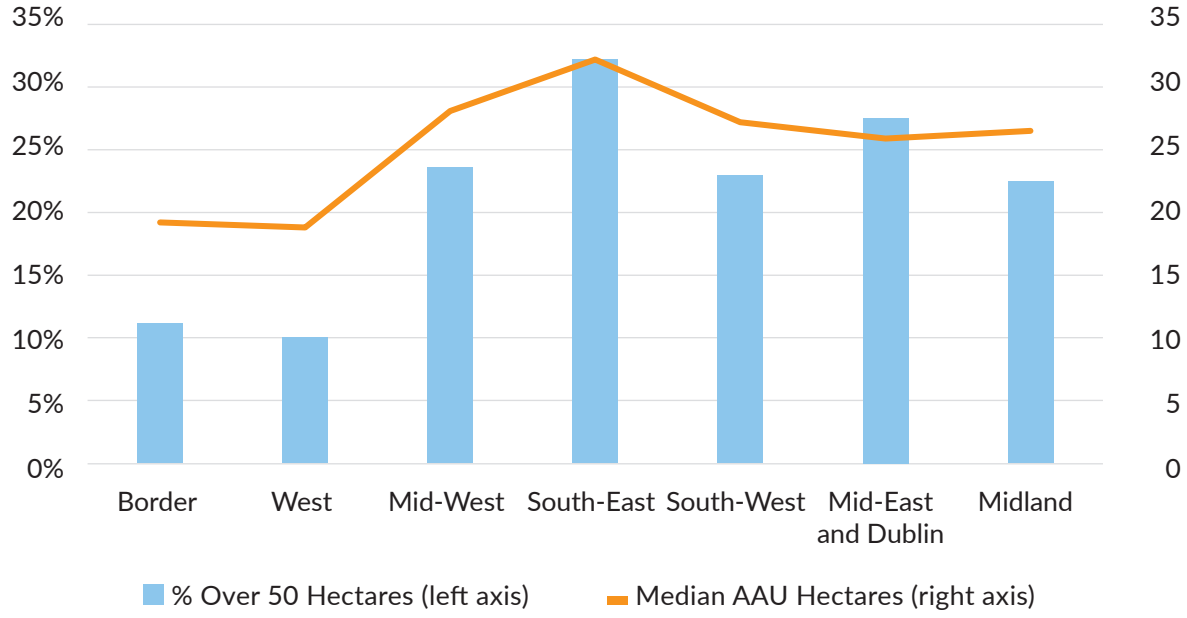
Figure 2.19 *Total Number of Farms 1970 - 2020*



Source: *CSO Agriculture Census*

Farm holdings tend to be bigger in the south and east of the country compared to the west and the border regions. In the border and west regions only around 10% of the farm holdings are greater than 50 hectares while in the south-east 32% of farm holdings are larger than 50 hectares. This is also reflected in the median or middle size of farms with the median size of farms in the west just 18.8 hectares compared to the median size in the southeast region of 32.2 hectares, over 70% larger.

Figure 2.20 *Proportion of Farms over 50 Hectares by Region and Median AAU, 2020*

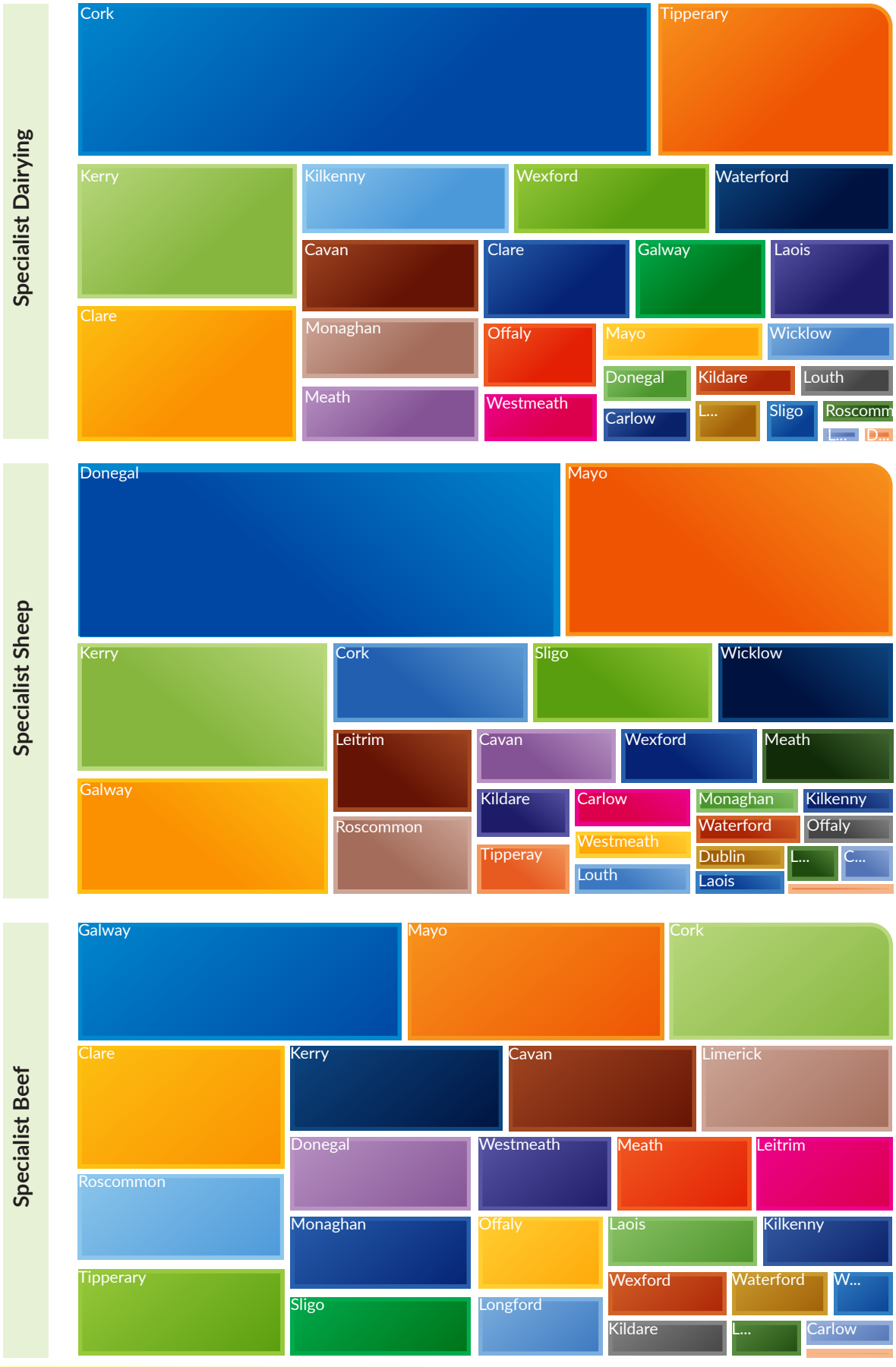


Source: *CSO*

According to the CoA, in 2020 there are 15,319 specialist dairy farms in the country with a quarter of them in the county of Cork with 3,801 dairy farms. Tipperary accounts for just over 10% of the specialist dairy farms followed by Kerry and Limerick, which account for just less than 9% each. Dublin, Leitrim and Roscommon have each less than 100 specialist dairy farms with 25, 31 and 90 respectively.

There are 17,435 specialist sheep farms with just less than a quarter of them in Donegal with 4,193. Mayo accounts for almost 17%, while Kerry has close to 10% of the specialist sheep farms. At the other end of the scale, Limerick with 64 and Clare with 96 specialist sheep farms have the least of any county, followed by Longford and Laois that have less than 110 each.

Figure 2.21 *Percentage of Total Specialist Dairy, Sheep and Beef Farms by County, 2020*



Source: CSO

The largest group of specialist farmers are specialist beef farms with 74,159 such farms in the country. Galway has 8,451 specialist beef farms and that accounts for 11.4% of the total followed by Mayo with 6,853, Cork with 5,857, Clare with 5,109 and Roscommon completing the top five counties with 4,368. As with specialist dairy farms, Dublin has the least specialist beef farms with 199, while Carlow with 598, Louth with 651 and Wicklow with 676 are the only four counties with less than 1,000 specialist beef farms.

CSO data shows that there are 4,567 specialist tillage farms, 8,508 mixed grazing farms, 1,759 mixed crops and livestock farms, 11,516 mixed field crops farms and 1,774 other farms.

2.9 Age & Gender Profile of Farmers

According to the CoA 2020, more than half of farm holders were aged 55 or over. Farm holders over 65 years of age made up 33% of all farm holders in comparison to 26% in 2010. In 2020, 25% of farm holders are in the 55 to 64 years age group. The number of young farmers under 35 years old was 7% in 2020, up slightly on the 2010 figure of 6%.

The average age of farm holders has increased over the past thirty years. In the 1991 agriculture census the average age of Irish farmers was 51.9 years of age. It dropped in the year 2000 to 51 before rising again in the next two census of agriculture reaching 57.2 years in 2020, up 5.3 years over those 29 years. The median age, or the middle value when data is ordered from least to greatest, is similar to the average age rising from 52 years in 1991 to 57 in 2020.

Table 2.6 *Mean and Median Age of Farm Holder, 1991 – 2020*

	1991	2000	2010	2020
Average age	51.9	51	54.4	57.2
Median age	52	50	55	57

Source: *CSO*

Between 1991 and 2020, the proportion of male farmers fell from 90% to 87% of all farm holders, reflecting the growing proportion of female farm holders relative to 30 years ago. However, while in 2020, 13.4% of farm holders were female, there was significant differences in the percentage of female farm holders depending on the region of the country.

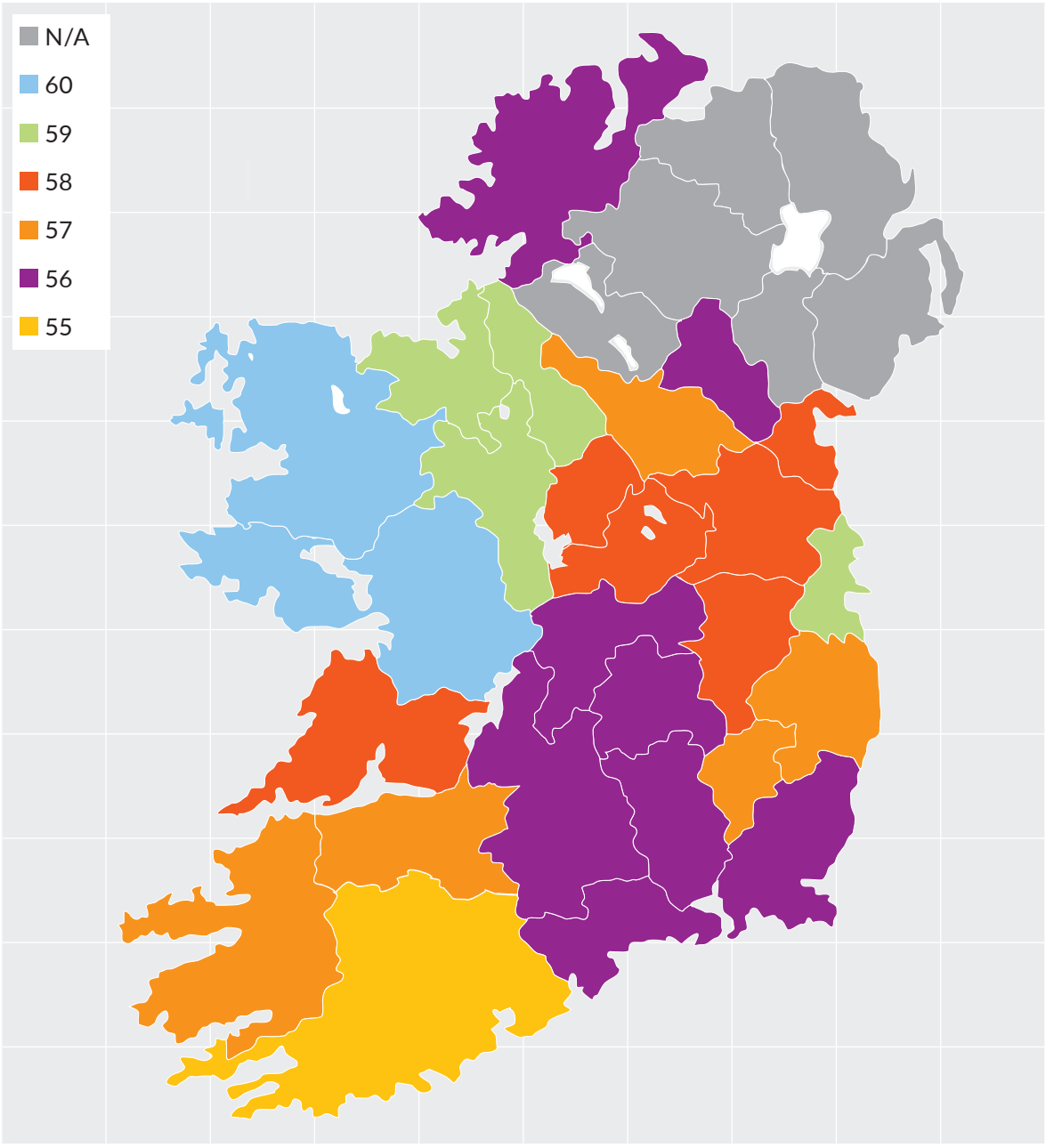
Figure 2.22 *Percentage of Female Agricultural Holdings by Region, 2020*

Source: *CSO*

In the midlands region 11.7% of the farm holders were female compared to the national average of 13.4%. The largest proportion of female farm holders were in the west region, covering counties Galway, Mayo and Roscommon, while the southwest region also had a higher percentage of female farm holders than nationally. The southwest region covers counties Cork and Kerry.

The CoA also provided details of the average age of farmers by county. As shown in the map the youngest farmers are from Cork where the median age is 55 years, while the farm holders from Galway and Mayo are the oldest with a median age of 60 years. Farm holders in the other three Connaught counties, namely Leitrim, Sligo and Roscommon are just a year younger at 59 years, the same age as farm holders in Dublin.

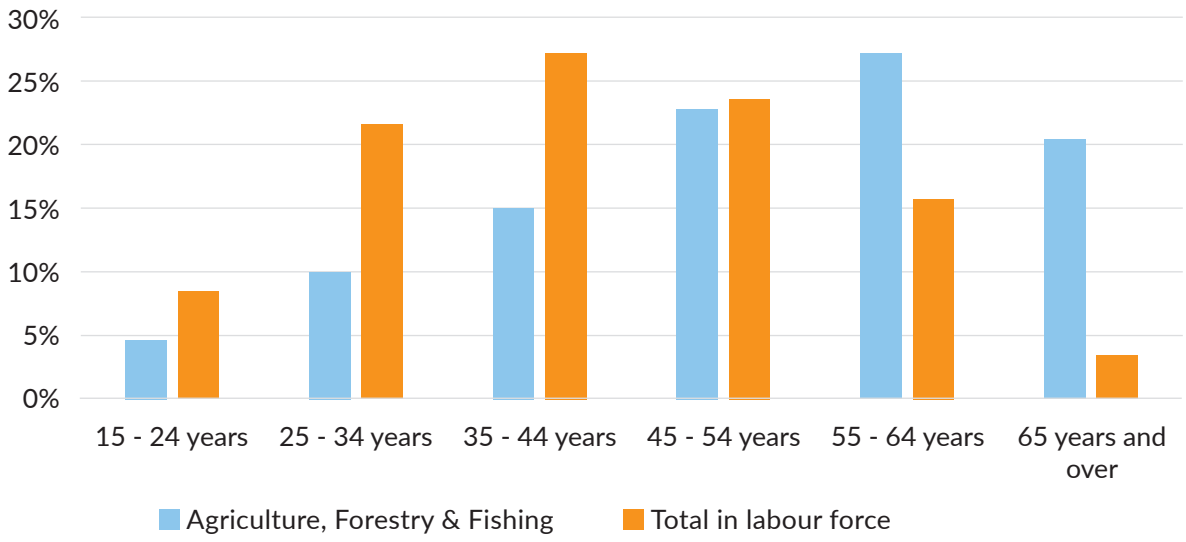
Figure 2.23 *Average age of the farm holder by county, 2020*



Source: *CSO*

In the Census of Population 2022 the CSO gathered data on the age of the workforce. Among the population over the age of 15 in the labour force, 3% were 65 years or more with a further 16% aged between 55 years and 64. However, among those over 15 years who worked in agriculture, forestry and fishing, 20% were 65 years or older while there was a further 27% aged between 55 and 64, meaning that close to half of the people working in agriculture, forestry and fishing were 55 years or older compared to 19% in the general labour force.

Figure 2.24 *Proportion of Population in the Labour Force and in Agriculture, Forestry & Fishing by Age Group, 2022*



Source: CSO

2.10 Employment

The agri-food sector is an important employer nationally and particularly in rural and coastal areas. The agri-food sector covers primary agriculture, forestry, fishing, along with the manufacturing of food and beverages and manufacture of wood and products of wood and cork (except furniture). In 2022, according to the CSO's Labour Force Survey (LFS) the sector employed 164,900 people, or 6.5%, of the total workforce in Ireland, which had almost 2.6 million people at the end of 2022.

The numbers employed in the sector decreased by about 5,500 people compared to 2021 but were similar to 2020. Most of the decline in numbers employed was in the farming sector but numbers employed dropped in the forestry and fishing sectors also. The numbers employed in the manufacture of beverages increased by 1,200 to 9,000 in 2022 but the numbers employed in the manufacture of food declined by about 900.

The LFS Indicates that the agriculture, forestry and fishing sector employs over 101,000 people. However around 57% of farm holders or their spouses have an off-farm employment which is likely considered as their main employment, and therefore their work on the farm is not included in the LFS. According to the CSO 2020 Agricultural Census, there were 278,580 family and regular non-family workers on Irish farms, indicating that many farm holders and their family members work part -time on the land in addition to their main employment. This number has actually increased from each of the two previous agriculture censuses, with 272,016 family and regular non-family workers in 2010 and 257,948 in 2000.

In a June 2023 working paper issued by the IGEES staff in the Department of Enterprise, Trade and Employment entitled Labour Market Dynamics and the Rising Incidence of People Working Multiple Jobs in Ireland it found that *"there is a disproportionate number of persons working in Agriculture who have multiple jobs."* In 2022, 26% of the approximately 80,000 multiple job holders were employed in Agriculture in their second job down from 41% in 2002. The working paper outlines *"Despite this fall in the share of secondary employment in Agriculture, persons with second jobs are still disproportionately likely to work in Agriculture in their second job compared to the labour force more generally, with just four per cent of the total number of persons in employment working in agriculture. It is also important to note that while the relative share of persons with a second job in agriculture fell, absolute numbers have continued to increase, with 10,200 more people now employed in a second job in the agricultural sector compared to Q4 2002."*

Table 2.7 *Employment in the Agri-Food Sector, Average for 2020-2022*

	2020	2021	2022
Crop and animal production	96,300	100,900	95,500
Forestry & fishing	6,000	6,125	5,650
Manufacture of food & beverages	54,725	57,400	57,750
Manufacture of wood	6,000	6,000	6,000
Total Agri-food employment	163,025	170,425	164,900
Total Employment all sectors	2,253,025	2,389,225	2,547,300
Agri-Food as % of total	7.2%	7.1%	6.5%

Source: CSO

In 2000, the Agri-Food sector employed 196,775 people, representing 11.1% of the total workforce in Ireland, which then stood at 1,772,900. The numbers employed in the Agri-Food sector have reduced somewhat over the past 22 years, while total employment across all sectors has risen. In 2022, the average number of people employed in the Agri-Food sector was 164,900, down 31,875 compared to the year 2000 or by 16%. At the same time, total employment in Ireland increased to an average of 2,547,300, an increase of 774,400, or 44%. As Agri-Food sector employment decreased and overall employment increased, the percentage of people employed in Agri-Food sector has dropped and it stands at 6.5% of total employment in 2022.

Most of the 101,150 people working in agriculture, forestry and fishing are self-employed as individual farmers. However, particularly on larger farms, there are workers employed. As part of the Frontier Series Output, the CSO have in recent times issued a release called the Monthly Estimates of Payroll Employees using Administrative Data. The May 2023 release showed that there are 28,100 employees in the agriculture, forestry and fishing sector.

Table 2.8 *Employment in the Agri-food Sector 2000-2022*

Year	Crop and animal production	Forestry & fishing	Manufacture of food & beverages	Manufacture of wood	Total Agri-food employment	Total Employment all sectors	Agri-Food as % of total
2000	122,625	6,250	58,125	9,775	196,775	1,772,900	11.1%
2005	107,175	4,750	58,150	9,850	179,925	2,037,850	8.8%
2010	101,775	8,525	46,375	5,800	162,475	1,925,575	8.4%
2015	103,925	5,525	56,150	3,975	169,575	2,057,350	8.2%
2022	95,500	5,650	57,750	6,000	164,900	2,547,300	6.5%

Source: *CSO*

The largest drop has been in crop and animal production, which has seen employment levels fall by about 27,125 while fishing and forestry have seen a drop of about 600. There is a decrease of just 375 jobs in the manufacture of food and beverages from 58,125 to 57,750 and a drop of 3,775 in the manufacture of wood products and products of wood and cork.

Employment in the Agri-Food sector is calculated based on detail in the quarterly Labour Force Survey. Due to the seasonal nature of Agri-Food sector employment, the figures used here are an average of the four quarters for each year. Included are the numbers employed in the following 2-digit NACE codes: 01 crop and animal production, hunting and related service activities; 02 forestry and logging; 03 fishing and aquaculture; 10 manufacture of food products; 11 manufacture of beverages and 16 manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials.

2.11 Women in Agriculture

Gender equality remains a core principle of the European Union (EU), and a key objective of the United Nations' Sustainable Development Goals (SDGs), specifically Goal 5 which aims to "Achieve gender equality and empower all women and girls". The Common Agricultural Plan (CAP) 2023-2027 places particular focus on promoting women's participation in the socio-economic development of rural areas, with special attention to farming to support the role of women in the sector.

The World Economic Forum's (WEF) Global Gender Gap Index benchmarks 146 countries progress towards gender parity via Economic Participation and Opportunity, Educational Attainment, Health and Survival and Political Empowerment. The WEF reports gender parity has a fundamental bearing on whether economies and societies thrive. Developing and deploying one-half of the world's available talent can only improve the growth, competitiveness and future-readiness of economies and businesses worldwide.

The Global Gender Gap Index Report published in July 2022 identifies gender gaps in the workforce as an emerging crisis. Gender gaps are driven and affected by various factors, including long-standing structural barriers, socioeconomic and technological transformation, as well as economic shocks. More women are moving into paid work and leadership positions, yet globally societal expectations, employer policies, the legal environment and the availability of care still impact females' choice of educational and career paths. In addition, geopolitical conflict, and climate change impact women disproportionately while the projected deepening of the current cost-of-living crisis is impacting women more severely than men, as women continue to earn and accumulate wealth at lower levels. In 2023, the gap has closed by 68.1%. However, at the current rate of progress, it will take 132 years to reach full parity, a four-year improvement compared to the 2021 estimate of 136 years. Across the 146 countries covered by the 2022 index the gender gap has closed by:

Economic Participation and Opportunity	60.3%
Educational Attainment by	94.4%,
Health and Survival gender gap has closed by	95.8%,
Political Empowerment	22.0%.

Overall Ireland ranks 9th globally with gender gap score of 80.4%, an increase of 0.4% on the 2021 score, indicating a slightly lower than 20% gender gap still to be closed.

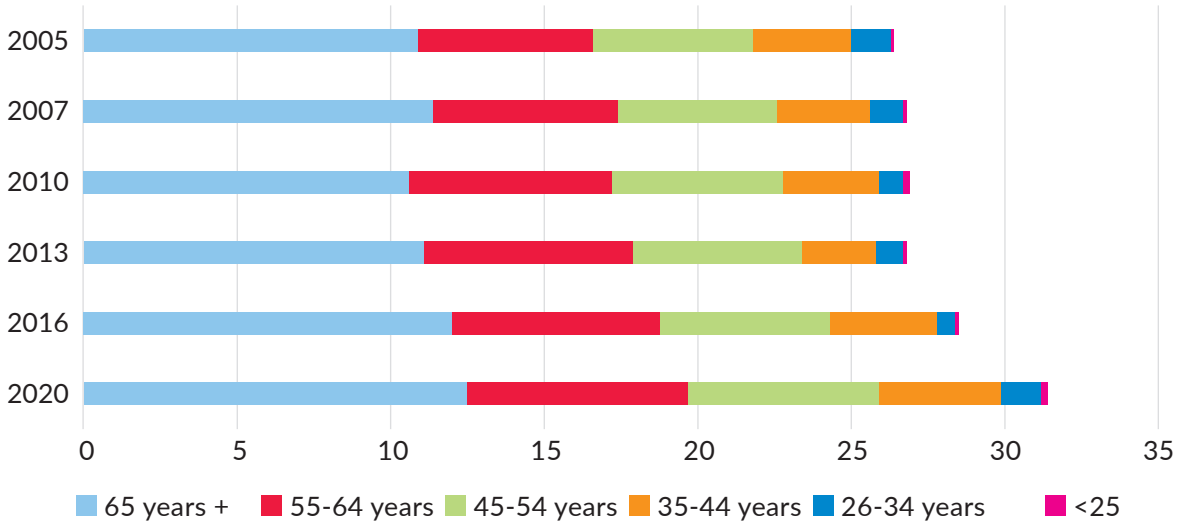
The latest CSO Census of Agriculture, conducted in 2020, indicates that of the total 130,216 farm holders in Ireland some 13% or 16,900 were women. Of the 60,085 (46%) farm holders who had a succession plan in place at that time, 9,759 or 16% indicated the successor was female.

Eurostat data published in November 2022 indicates that within the European Union, agriculture remains a big employer with approximately 8.7 million people working in the sector in 2020. They also indicate farming remains a male-dominated profession, with only 31.6% of farmers being women in 2020. The gender imbalance among farmers is particularly strong

in the Netherlands; only one in every twenty farmers, or 5.6%, was female in 2020. Female farmers were also relatively uncommon in Malta and Germany, with both having 10.8% of all farmers are female, while in Denmark it was 10.9% and in Ireland it was 11.4%. There was a closer gender balance in Latvia and Lithuania with 44.8% and 44.9% shares respectively of farmers that were female.

Female farmers continue to be in the minority, but their share is growing, with numbers increasing between 2016-2020 for female farm managers in all age groups below 55 years. Against the backdrop of a decline in the overall number of farmers, the share of farm managers that are women increased from 26.4% in 2005 to 31.6% in 2020.

Figure 25 *EU Female Farm Managers as Percentage of All Farm Managers, by Age, 2005 - 2020*



Source: *Eurostat*

Women in Agriculture Ireland

According to the 2020 CSO Census of Agriculture in Ireland, some 13.4% of farmers are women. This number is up from 2000, when women represented 10.7% of farm holders. This trend of more female holders of farms should continue as farm holders who have a succession plan in place indicated the successor was female in 16.2% of cases.

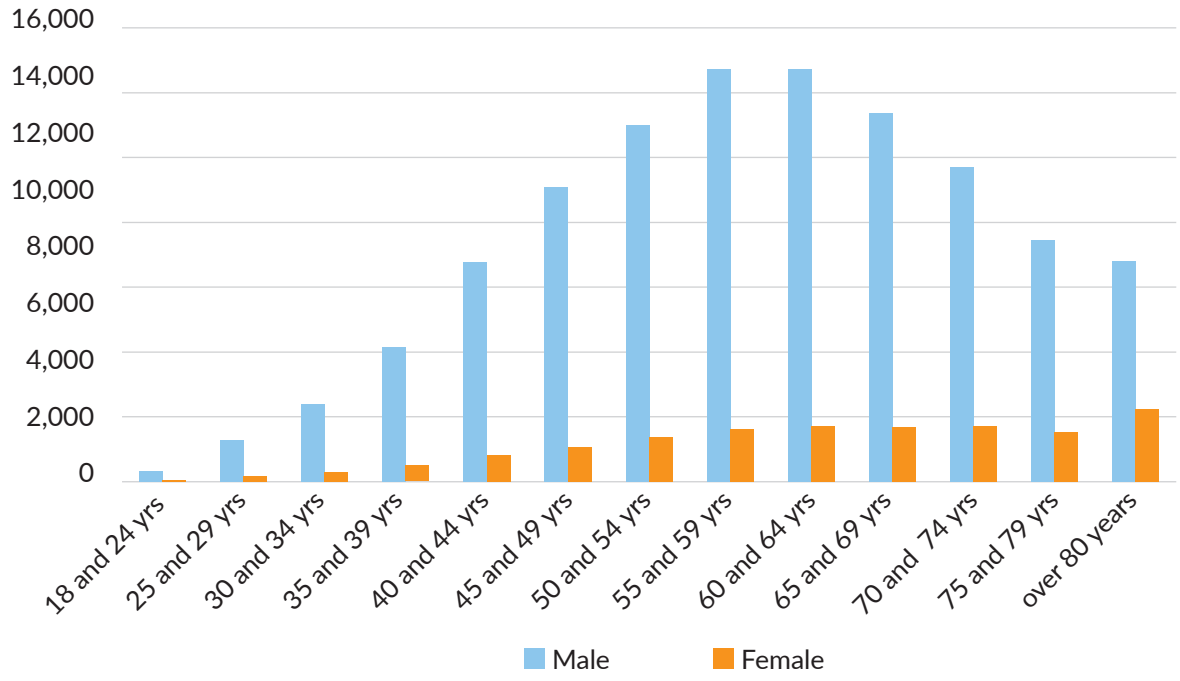
The CSO Labour Force Survey for Q1 2023 indicated that an average of 16% of the labour force working in primary agriculture, forestry and fishing were women. This is up from 14.9% in 2021 and 12.5% in 2020. However, the numbers working in agriculture, forestry and fishing vary from year to year, depending on other employment opportunities and events such as COVID-19.

Quality and Qualifications Ireland's (QQI) Certification Data and Analysis Report 2022 indicates the share of female learners attaining major awards has dropped this year, standing at 52% or 57,572 recipients compared to 58% or 59,015 in 2021, 54% in 2020 and 52% in 2019. These 57,572 recipients received a total of 94,283 awards between them. In contrast, according to the Teagasc Education Vision Report 2018, only 11% of further education awards for Teagasc programmes between 2012-2016, were to female graduates. Female participation in agricultural higher education is observed to be greater, in the range of 40% for some university degree programmes. By contrast, female participation in veterinary education in Ireland is much higher and can range from 70% to 80%.

According to the DAFM's client database, 13% of active individual herdowners in 2022 were women. Analysis of these figures shows just under 7% of females were under 40 as compared

with 10% in 2021. A slightly higher rate of 8.5% of male herdowners were under 40. Over 60% of female herdowners were over 60 in 2022, up on the 2021 figure of 50%. Just over 50% of male herdowners were over 60. For herdowners over 80 years, 15% of females are in this category, up from 10% on 2021, as compared with 7% of males which is up from 6% in 2021. According to the CSO, 27% of the agriculture labour force working on farms in 2020 were female.

Figure 2.26 *Active Individual Herdowners in 2022 by Age and Gender*



Source: *DAFM*

Women occupy various roles in farming as independent producers, business managers, agriculture helpers and farm homemakers but in common with the EU overall, there is unequal participation by women and men. Much of the work done by women on farms continues to be largely invisible and without status as farm holder or registered herdowner.

Ireland's agri-food strategy, Food Vision 2030 recognises the importance of gender balance to the long-term sustainable future for primary producers and includes actions to promote and improve gender balance at all levels, including at senior management and board level. It also includes a commitment to hold a National Dialogue on Women in Agriculture and recommends the establishment of female farmers' networks and other supports to better understand and meet the needs of Irish women farmers, fishers, and rural female entrepreneurs. In this regard a National Dialogue was held on the 1st February 2023 in Portlaoise, chaired by former Tánaiste and Minister for Agriculture, Mary Coughlan. The event was very well attended and well received. The conclusions of the Dialogue were compiled into a report to inform future policy around gender in the agriculture sector in Ireland.

Ireland's CAP Strategic Plan 2023-2027 marks a milestone for women in farming as for the first time measures have been developed with a gender-aware perspective. The CAP Regulations place particular focus on promoting the participation of women in the socio-economic development of rural areas, with special attention to farming, supporting women's key role. The CAP 2023-2027 includes the objective to promote gender equality under CAP Specific Objective 8 namely Vibrant Rural Areas and interventions have been designed in this regard.

Ireland will implement the following package of measures on gender equality in the CAP Strategic Plan:

- Increased rate of grant aid to 60% for women aged 41-66 years under the Capital Investment Scheme expected to launch in June 2023.
- Knowledge Transfer (KT) Programme - Women only KT Groups expected to launch January 2024.
- European Innovation Partnerships - call for proposals to incentivise women's participation in agriculture.
- Improved recording, collection, and reporting on gender data across all CAP schemes.
- All CAP interventions will be developed with a gender aware perspective to ensure there are no inherent barriers to women's participation.
- The National CAP Network established in the CAP Strategic Plan will be leveraged to increase the involvement of all women in the implementation of CAP.
- The CAP Strategic Plan was approved by the European Commission in 2022 with schemes rolling out since January 2023.

ACORNS (Accelerating the Creation of Rural Nascent Start-ups)

The ACORNS programme was developed to support female entrepreneurs from rural Ireland in the early stages of new businesses. Based on a belief that entrepreneurs learn best from each other, the ACORNS initiative is focused on interactive round table sessions that are facilitated by female entrepreneurs who have started and successfully grown businesses in rural Ireland. They are known as ACORNS Lead Entrepreneurs and have practical, first-hand knowledge and experience of owning a successful business in rural Ireland. Each Lead Entrepreneur works with a group of approximately eight participants. They address enterprise challenges and support participants in considering how best to start, develop and position their businesses for sustainability and growth.

To qualify, participants must have, or intend to have, a new business located outside the city boundaries of Dublin, Cork, Galway, Limerick and Waterford. The programme is open to early-stage female entrepreneurs who have recently started a business, which has less than two years of sales, or who are at an advanced stage of setting up a business. The aim is to provide up to 50 entrepreneurs on each cycle of the programme with the knowledge, support and

networking opportunities to meet and even exceed their current aspirations. Past participants report increased sales, exports and employment creation. The programme is currently in its seventh cycle and runs part-time over six months. Business can be in any sector and applicants who expect to grow their business and employ others are given special consideration.

As this programme is funded by Rural Innovation and Development Fund within DAFM, there is no cost to the participants. The total investment in ACORNS is over €1.5 million since its inception.

ACORNS 8 ran from October 2022 to April 2023. Forty-six early-stage female entrepreneurs living in rural Ireland completed the programme. At the end of the cycle, all participants reported that participation in ACORNS was of value to their business.

- The combined turnover of the overall group almost doubled over the six months of the cycle.
- There were 5 participants that became exporters for the first time. 14 participants now have export experience (31%).
- There were 16 additional employees hired during the period.

The ACORNS 8 participants were very positive in their feedback in terms of their experience of the initiative: 84% reported that they made a decision for their business during the round table sessions; 89% said that their participation brought about practical change within their business; 96% felt nearer to achieving their ambitions; 100% would recommend participating in ACORNS to others; and 100% would welcome a means of staying in contact with the ACORNS network.

Case Study

BiaSol

A pandemic lockdown project across two continents led Niamh Dooley, from Athlone, Co Westmeath, and her brother Ruairi, to create BiaSol, a business that upcycles spent grain from breweries into healthy food products. Niamh and Ruairi, who was then based in Melbourne, founded the company in October 2020, after investigating the possibilities of a sustainable, nutritious food product as a way of keeping in touch over Zoom, when they were both experiencing the limitations of lockdowns.

Niamh, who had graduated with a degree in Food Science from University of Limerick in 2016, had been working on Food Dudes, Bord Bia's healthy eating programme for primary schools, but was let go due to the pandemic. After securing a time-share in a test kitchen, BiaSol succeeded in getting €50,000 from Enterprise Ireland's Competitive Start Fund, which enabled them to set up their own premises in Tullamore, Co Offaly.

BiaSol has two product ranges which are sold nationwide in over 150 stores. The products include:

Protein Pancake Mix, Granny's Soda Bread Mix, Super Scone Mix and Crafty Cookie Mix and Super Milled Grains, Morning Glory Grains and Whole Fibre Grains. The products are attractive to consumers and food industry professionals because they boost flavour and are very high in fibre.

The company currently employs five full time and three part time employees. BiaSol has had nationwide success: 2021 Irish Times Innovation Winner for Manufacturing & Design, 2022 Blas Na hEireann Finalist, Chefs Larder Winner & Best in County and 2023 RDS Spring Awards Winners Rural Innovation. BiaSol will export to the UK later this year and the company has recently been awarded HPSU funding which will enable this growth.

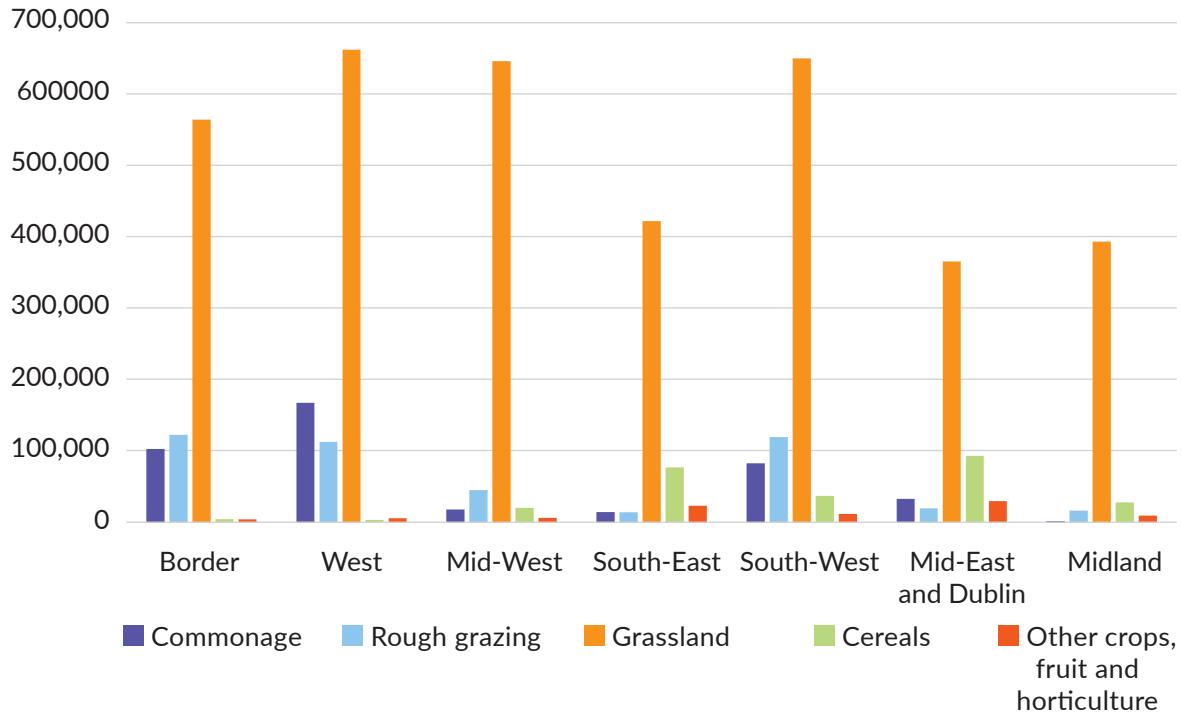
Niamh found that taking part in ACORNS gave her confidence as a woman in business, and the programme was a great opportunity to learn from other business owners. She, along with the team, plans to grow the B2B aspect of the business enabling other food manufacturers to use brewers spent grains in their own products which will further support the circular economy.

2.12 Land Utilisation, Prices, and Land Mobility

According to the CoA, the total agricultural area utilised (AAU), excluding commonage, is 4,509,256 hectares, made up of 3,699,919 hectares under grassland, 451,537 hectares under rough grazing, 265,592 hectares under cereals and 92,208 hectares under other crops, fruit and horticulture uses.

There is a further 421,287 hectares of commonage land which is held in common ownership on which two or more farmers have grazing rights. A quarter of all the commonage in Ireland is in Mayo, with almost half of all commonage between the three counties of Donegal, Galway and Kerry. Six counties have less than 1,000 hectares of commonage, namely Kilkenny with 491 hectares, Offaly with 209 hectares, Longford with 200 hectares, Meath with 59 hectares, Westmeath with 4 hectares and there is no commonage in Monaghan.

Figure 2.27 *Land Utilisation in Hectares by Region, 2020*



Source: *CSO*

CSO Agricultural Land Prices

In May 2023, the CSO released the Agricultural Land Prices 2021 publication. The publication presents estimates of Agricultural Land Prices for both arable land and permanent grassland per acre at the state and regional level. In interpretation of these figures, allowance should be made for the fact that only a small amount of agricultural land is sold each year. The volume of eligible land sold in 2021 was only 1.3% of the total agricultural land area as detailed in the most recent CSO Census of Agriculture. As the statistics relate to the land sold purely for agricultural use, a number of different transaction types are excluded from the statistics such as transactions for non-agricultural purposes, land identifiable as forestry, transactions with entitlements related to the land, inheritance transfers, commonage land or areas of land less than 0.2 hectares.

According to the CSO in 2021, there was 58,645 acres of agricultural land sold in Ireland. This was up from 48,537 acres sold in 2020 (note the CSO have revised this figure upwards from 29,031 acres in their 2020 publication). The median price was €7,501 per acre and the total value of land sold was €476.5 million. The total value of land sold was up 42% on the 2020 value of €334.9 million, with the volume of land sold up 21%. The median value per acre, or the value directly in the middle when the transactions are sorted in order of price per acre, was up 7.4% on 2020.

Over the nine years between 2013 and 2021 the median price of agricultural land increased in value by 17% while the volume of land sold has fallen by 18% over the same period.

Table 2.9 *Volume and Value of Land Sales, 2013 – 2021*

Year	Median Price € / ac	Mean Price € / ac	Number of Transactions	Volume of Land Sold Acres	Value of Land Sold € Million
2013	€6,390	€6,089	3,980	71,684	€436,476,701
2014	€6,899	€6,722	3,547	65,848	€442,647,691
2015	€6,791	€5,786	3,116	66,398	€384,145,744
2016	€6,576	€5,520	2,951	62,533	€345,161,613
2017	€6,831	€5,609	3,354	70,735	€396,775,812
2018	€6,951	€6,455	3,050	55,145	€355,949,924
2019	€7,047	€7,721	3,429	59,199	€457,052,808
2020	€6,987	€6,900	2,812	48,537	€334,919,849
2021	€7,501	€8,126	3,541	58,645	€476,538,291

Source: CSO

The CSO give a breakdown of sales by land type which are determined by the CSO's Census of Agriculture. The two classifications they use are "Arable Land" and "Permanent Grassland" and these differ greatly in price. The median price for arable land in 2021 was €14,756 per acre while the median price for permanent grassland was €7,309 per acre. The number of transactions also varies by land type with just 113 arable land transactions in 2021, while 97% of the transactions (3,428) were for permanent grassland.

Table 2.10 *Volume and Value of Land Sales by Land Type, 2019 – 2021*

Year	Median Price € / ac	Mean Price € / ac	Number of Transactions	Volume of Transactions Acres	Value of Transactions € Million
Arable Land					
2019	€11,886	€20,721	115	2,649	€54.89
2020	€12,032	€11,701	114	2,098	€24.54
2021	€14,756	€20,375	113	2,353	€47.94
Permanent Grassland					
2019	€6,859	€7,112	3,314	56,550	€402.16
2020	€6,834	€6,683	2,698	46,439	€310.38
2021	€7,309	€7,614	3,428	56,292	€428.60

Source: CSO

Close to one quarter of all land sale transactions in 2021 were in the West region, which comprises of counties Galway, Mayo and Roscommon, where there were 838 transactions. In comparison there were just 26 transactions in county Dublin. However, of the 838 transactions in the West there were no arable land sales, nor was there any arable land sold in the Border region of counties Cavan, Donegal, Leitrim, Monaghan and Sligo. In Dublin, 18 land transactions were for arable land, while there was 8 for permanent grassland.

Figure 2.28 *Number of Transactions by Region - All Land Types, 2019 - 2021*

Source: *CSO*

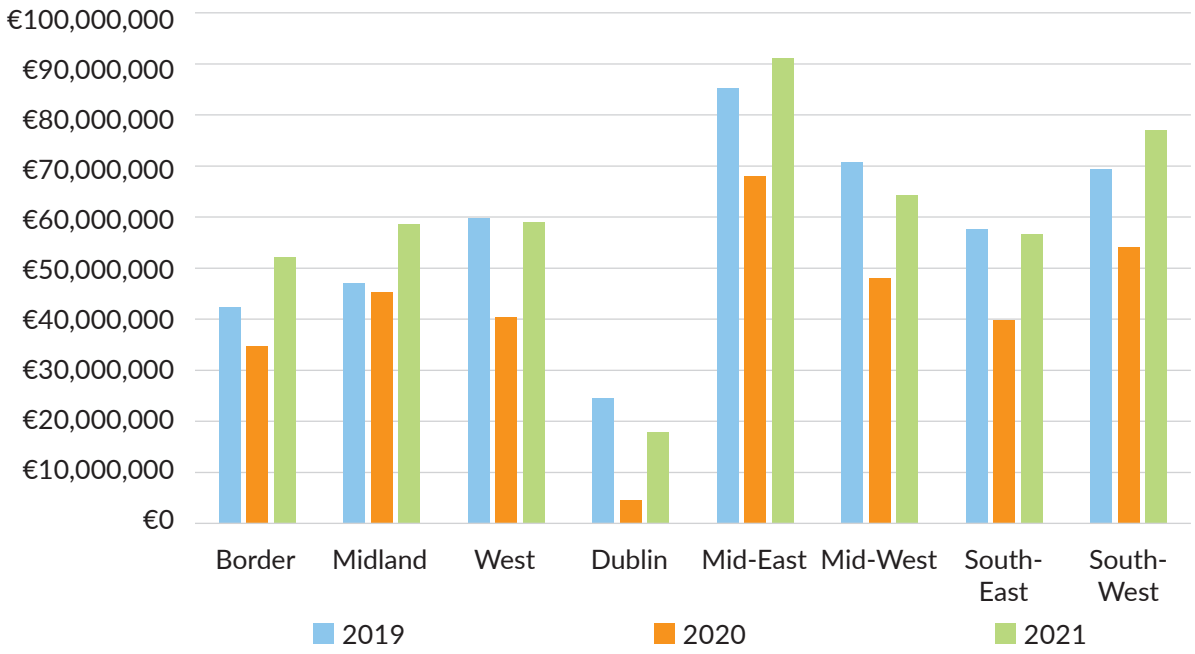
The median price of land sold per acre has not varied much over the period 2019 to 2021 apart from in county Dublin. In 2021 the median price in Dublin reached €38,863 per acre up from around €15,000 in the previous two years. Agricultural land prices in Dublin are the highest in the country with land on the east coast of Ireland more expensive than on the western side. The west region and the border region were the only regions where the median land price was below the median price across the state.

Figure 2.29 *Median Price per Acre of Agricultural Land by Region, 2019, 2020 & 2021*

Source: *CSO*

The total value of land sales in 2019 was €457 million. This dropped to €335 million in 2020 partly due to the restrictions imposed by COVID-19, but the total value rose up to over €476 million in 2021. While close to a quarter all land sale transactions in 2021 were in the West region the total value of the sales represented 12% of total land values. Close to one fifth of the value of land sold was in the mid-east region of counties Kildare, Louth, Meath and Wicklow.

Figure 2.30 *Total Value of Land Sold by Region, 2019 - 2021*



Source: *CSO*

Other Land Sales Data

Along with the land price statistics published by the CSO, the Society of Chartered Surveyors Ireland (SCSI) and Teagasc publish an agricultural land market review and outlook each year, while the Farmers Journal publish an agriculture land price report each year.

The SCSI/Teagasc review released in April 2023 indicated that the volume of land sales in 2022 continued to increase, although at slightly lower levels compared to 2021. It forecasts that national farmland values will rise by up to 8% on average in 2023.

The Farmers Journal reported that there was continued strong demand for good farmland in 2022 with prices up by about 3%, while indications are that there will be even stronger demand in 2023.

Land Mobility & Long-term leasing

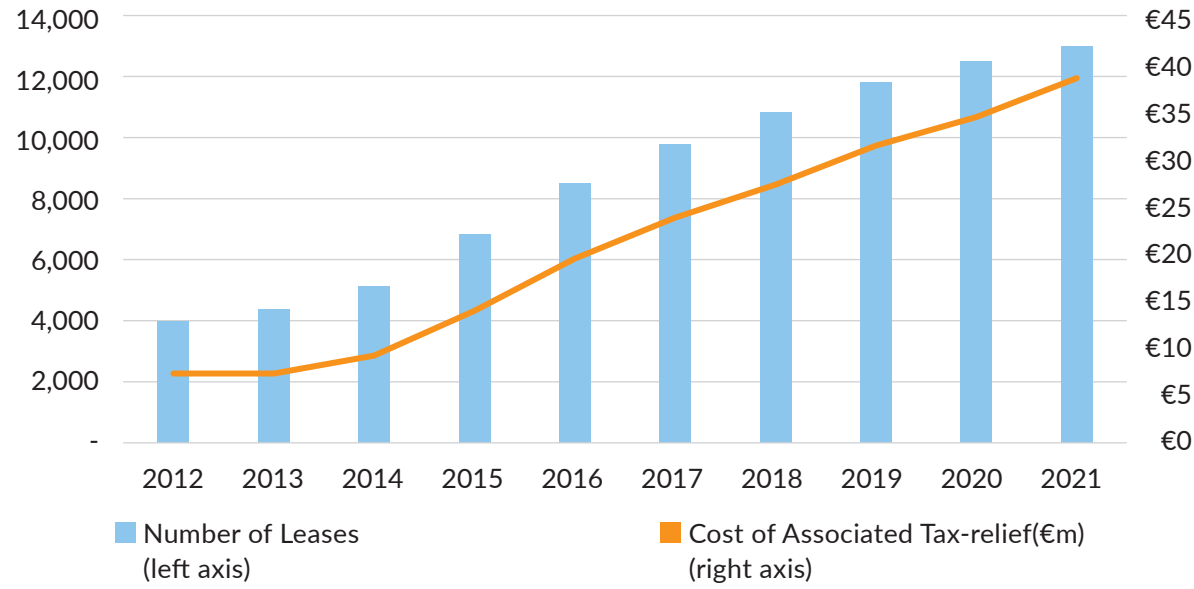
A key policy objective of the Agri-taxation was to increase the mobility and the productive use of land. It recommended the retention and enhancement of the income tax relief for long-term leasing, which has a number of advantages over the conacre system of land rental, it:

- Allows young farmers and new entrants to the sector gain access to land by providing a cheaper means of long-term access to land, as opposed to the relatively high cost of ownership.
- Provides security of tenure and the certainty required to encourage lessees to maintain and make an investment in improving land.

- Is especially important in accessing bank credit, as financial institutions generally match loan terms to lease duration and longer duration means more manageable repayments.
- Provides a route to retirement for older farmers, assisting in generation renewal.
- It also provides for better regulation of the land rental market.

Since 2014, there has been a significant shift from the short-term renting (conacre) system to long-term leasing. The main official source of data in this regard is from Revenue income tax returns, which show a steady rise in the number of long-term leases over the past 10 years from just under 3,600 in 2011 to almost 13,000 in 2021. The tax relief available to farmers over this period has increased six-fold from €6 million in 2011 to €38.4 million in 2021.

Figure 2.31 *Number of long-term leases and cost of associated tax-relief in €million, 2012 to 2021*



Leasing and Rental Data

The CSO notes that only 1.3% of agricultural land is sold annually. This means that leasing plays an important role in the agricultural land market. Due to the high demand for land, coupled with a low turnover of land via market sales, the leasing and letting markets are a competitive marketplace. This results in land rental prices aligning with the economic profitability of farming, compared to the sales market, where prices for land sold regularly exceed levels that would be justified by the returns from farming.

According to the SCSI/Teagasc review, land rental prices increased for almost all categories in 2022, the exception being land suitable for potatoes in Leinster where the rental price fell by about 5% to €439 per acre, the highest rental price for any land type or region. The Connacht/ Ulster region saw rental values increased by just 1% for land suitable for grazing, and by 5% for land suitable for grazing/ meadowing/silage, while in Munster and Leinster rental prices were mostly between 10% and 15% up in 2022 compared to a year earlier.

Table 2.11 *Land Rental Values Per Acre*

Year	Grazing/ meadowing /silage	Grazing only	Cereal crops	Beet, Maize, Beans	Potatoes
LEINSTER (excluding Dublin)					
2021	€245	€215	€259	€323	€463
2022	€266	€248	€290	€370	€439
% Change	9%	15%	12%	15%	-5%
MUNSTER					
2021	€231	€221	€244	€256	€326
2022	€261	€241	€283	€300	€383
% Change	13%	9%	16%	17%	17%
CONNACHT/ULSTER					
2021	€168	€161	no data	no data	no data
2022	€176	€162	no data	no data	no data
% Change	5%	1%	N/A	N/A	N/A

Source: *SCSI/Teagasc*

2.13 Expenditure, Investments, Borrowing and Interest

Borrowing

Central Bank data on Small and Medium-sized Enterprises (SME) and Large Enterprise Credit and Deposits for 2022 shows that credit advanced to Primary Industries, namely (i) agriculture, (ii) forestry, logging, mining, and quarrying and (iii) fishing and aquaculture sectors in 2022 stood at €700 million, indicating a steady reduction from the 2021 amount of €757 million and the 2020 amount of €781 million. Further analysis shows that new lending to the primary agriculture sector accounts for 88.5% or €620m of this total. Forestry, logging, mining, and quarrying accounts for almost 3.5% or €25m, with fishing and aquaculture accounting for 7.5% or €53m.

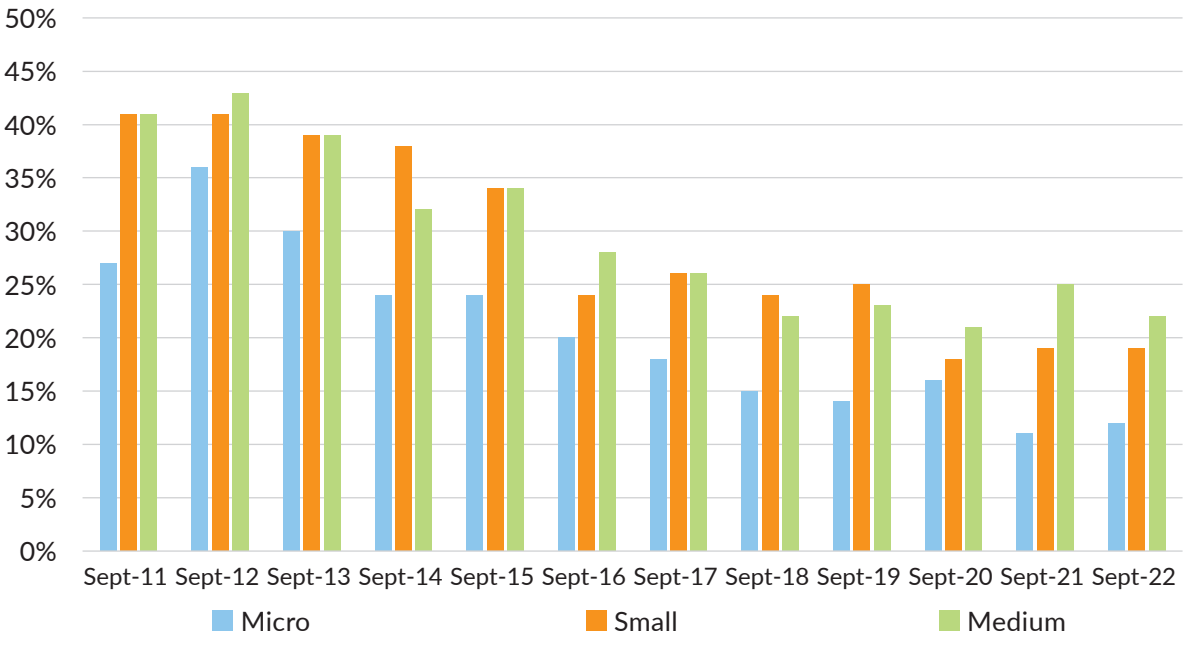
Credit outstanding for the primary industries at the end of 2022 remains at slightly over €3 billion, in line with 2021 and slightly lower than the €3.3 billion in 2020. Primary Agriculture currently accounts for 16% of the €18.3 billion in total outstanding debt held by all Irish SMEs, or 24% when Financial Intermediation and Property Related Activities are excluded.

The Department of Finance SME Credit Demand Survey April – September 2022, published January 2023, indicates demand for credit remained largely unchanged in the six months to September 2022, with only 17% of SMEs applying for bank finance during the period. The main reasons stated for not seeking credit during this period were:

(a) no requirement for credit (68%),
(b) a preference not to borrow (11%)
(c) fear of possible rejection (2%) or
(d) too expensive to borrow (2%).

When broken down by firm size, credit demand has increased slightly among micro companies and decreased by 3% in respect of medium companies. However, medium sized companies continue to have the highest level of credit demand at 22%. Demand for credit was highest for construction - 20%, wholesale - 17% and business services - 17%. Demand was lowest in sectors such as hotels and restaurants at 13% and manufacturing at 12%. Expected future credit demand is 17%, up 10% from September 2021. This reflects the current difficult business environment.

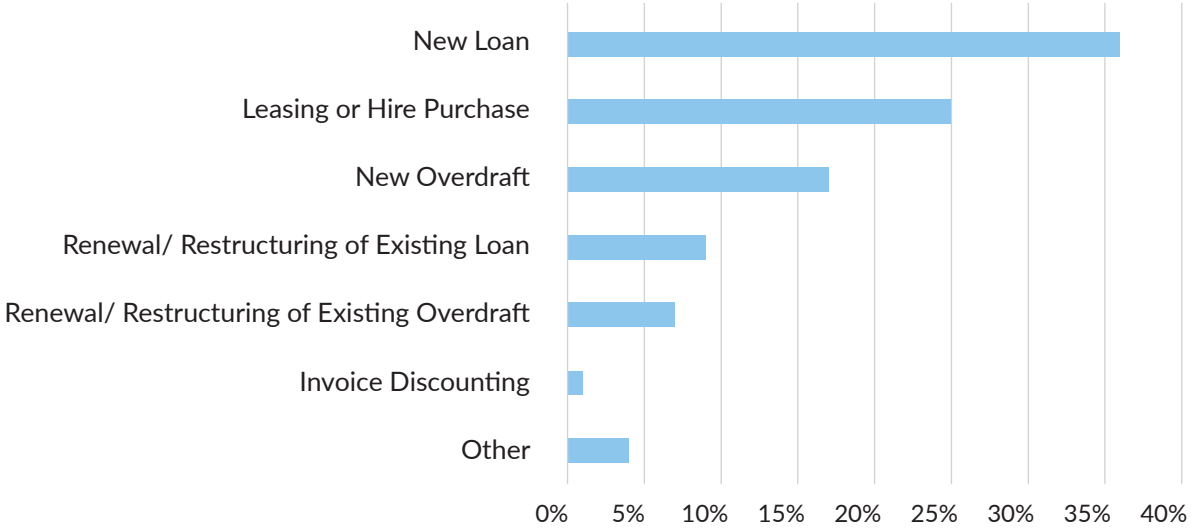
Figure 2.32 *Credit Demand by Company Size, 2011 - 2022*



Source: *Department of Finance and B&A*

New loans and leasing/hire purchase were the most requested finance products followed by new overdrafts. Compared to September 2021, there was an increase in the percentage of new overdraft products requested while requests for new loans decreased over the period.

Figure 2.33 *Lending Products Requested by SMEs - Most Recent Request*



Source: *Department of Finance and B&A*

Demand for non-bank finance remains an area of growth with 5% of SMEs availing of traditional finance such as leasing/hire purchase (44%) or new loans (20%) from a non-bank provider during the period.

A range of Government support measures were introduced during the period to help support small and medium sized enterprises during the aftermath of Russia's illegal invasion of Ukraine, which coincided with some re-structuring and down-sizing of the domestic banking sector, with the exit of Ulster Bank and KBC Bank. These measures include the Temporary Business Energy Support Scheme (TBESS) to assist with increasing energy costs and Ukraine Credit Guarantee Scheme (UCGS) to ensure that adequate credit is available to fund SMEs in Ireland.

The Credit Review Office assists SMEs, including agri-food sector borrowers, who have had an application for credit of up to €3 million declined or reduced by participating banks, and who feel that they have a viable business proposition. The Credit Review Office also looks at cases where borrowers believe that the terms and conditions of their existing loan, or loan offer, are unfairly onerous or have been unreasonably changed to their detriment. Currently the participating institutions are Bank of Ireland, AIB, Ulster Bank and Permanent TSB.

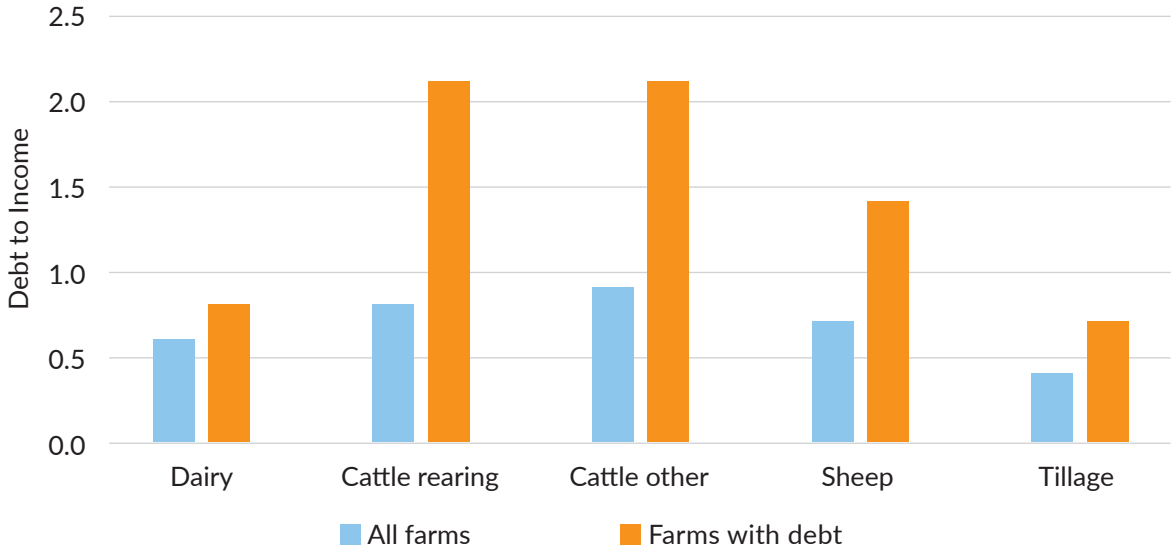
Investments

According to preliminary results from the Teagasc National Farm Survey (NFS) 2022, gross new investment on Irish farms declined by 11% in 2022. Amounting to over €1.35 billion across the 85,000 farms represented by the survey, levels of investment vary by farming system. Investment on dairy farms was up by 2%, accounting for over half of total investment for 2022. Investment on tillage farms was down 24% year-on-year to an average of €21,997 per farm.

Investment across drystock systems decreased further in 2022 with average investment expenditure for cattle rearing farms amounted to €5,085, from €5,939 in 2021. Equivalent figures for cattle other farms were €6,904 and on sheep farms €8,543.

Across all farming sectors the NFS found that overall debt on Irish Farms increased in 2022, up 1%, with the majority (75%) of farm-related debt classified as medium to long-term. In addition, the NFS recorded 61% of farmers have no farm business related debt, although it is notable that levels vary according to farm type. Two-thirds of dairy farms had related borrowings compared to just over one-quarter of cattle rearing and one-third of cattle other farms. Similarly, three out of 10 sheep farms and four out of 10 tillage farms had outstanding farm debt. The below bar chart shows the debt-to-income ratio for all farms.

Figure 2.34 *Farm Debt to Income Rations for All Farms and Those with Debt 2022*



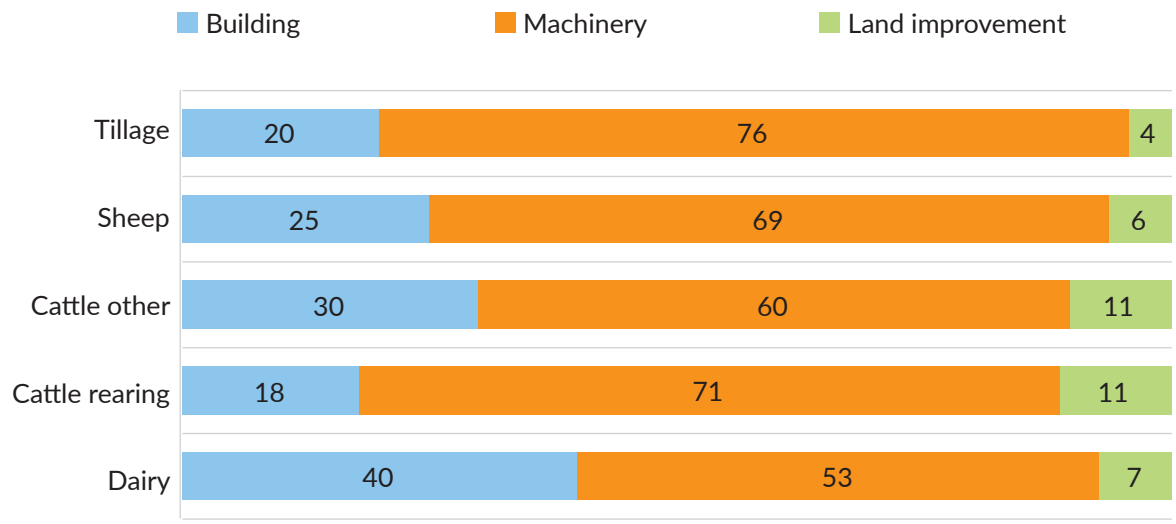
Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Although only 27% of cattle other farms reported having debt in 2022, the debt-to-income ratio of those with borrowings remains relatively high compared to other farm systems, at 2.14. The comparative figure on sheep farms was also relatively high, at 1.42, double the rate of 0.71 in 2021.

The debt to Family Farm Income (FFI) ratio reported on tillage farms in 2022 was 0.69 on average. Dairy farms were more likely to have debt than other farm types and were also more likely to have substantially higher absolute levels of debt. However, given their comparatively higher income levels, the average debt to income ratio on dairy farms improved, reducing by 0.51, from 1.28 in 2021 to 0.77 in 2022. Reductions in the debt to FFI for dairy farms generally occur in years when there are elevated income levels. More recently, this has resulted in the increased funding of investment using earnings as opposed to borrowings.

The composition of investment across farm systems shows that machinery accounted for the majority of on-farm investment across sectors. It accounted for just over half of on-farm investment on the average dairy farm, three-quarters of investment on the average sheep farm and between 60% and 70% on drystock farms in 2022. The remaining investment was allocated to buildings and land improvement.

Figure 2.35 *Average Composition of Farm Investment by Farm System 2022*

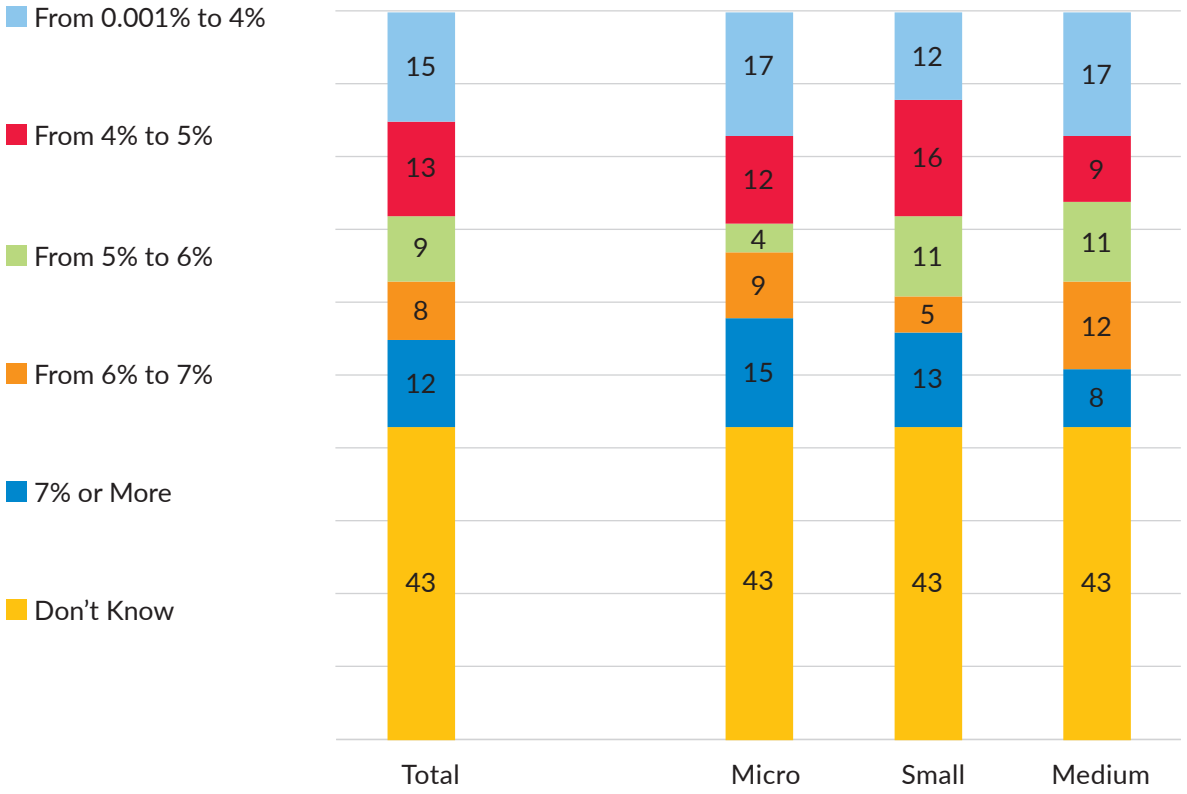


Source: *Teagasc, National Farm Survey – Preliminary results 2022*

Interest Rates

Interest rates for the primary agriculture sector remain at similar levels to 2020 and are higher than the average across all SME sectors. Central Bank figures show the average rate on outstanding amounts in the sector for 2021 was 4.40% against 4.28% for 2021 and 4.42% for 2020, while the average for all SMEs was 3.78%. Some of the difference may be attributable to the profile of the loans, as loans to the agriculture sector tend to be lower in value and higher in volume with fixed costs therefore spread over smaller repayment amounts.

Figure 2.36 *Average Cost of credit (Interest Rate) For outstanding Loans*



Source: *Department of Finance and B&A*

The average rate for new lending in the primary sector for 2022 was 4.52%, up from 4.43% in 2021 and down from 4.67% in 2020. This compares with the average rate of 4.19% for all SMEs in 2022. The Department of Finance's SME Credit Demand Survey provides further insight into interest rates charged in Ireland. It outlined that the average reported cost of credit on outstanding loans was 5.13%, an increase from 4.59% as reported in September 2021. It is worth noting that a significant percentage of SMEs responding to the credit survey were unaware of the cost of their outstanding loans. As can be seen from the table, interest rates payable vary depending on the size of the company.

The Central Bank of Ireland's Trends in SME and Large Enterprise Credit and Deposits for Quarter 4 2022 published in March 2023, reports that new loans to SMEs by Irish resident credit institutions was €959 million in Q1 2022, down 6% compared to the same period in the previous year. New lending trends differ substantially across SME economic sectors with lending to hotels particularly strong in Q1 demonstrating the highest new lending volumes since the onset of the COVID-19 pandemic. In contrast, lending to SMEs in the in primary industries was 26% lower in Q1 2022 relative to the previous year.

Outstanding SME credit on the balance sheets of Irish banks stood at €18.4 billion, a decline of 1.4% over Q4 of 2022. This included €5.6 billion relating to property and construction and €12.5 billion of core SME credit. Net lending to SMEs was down €272 million in Q4 2022, representing the first quarterly decline in over a year. Annually, repayments exceeded new lending by €8 million over the year to end-December.

Gross new lending to SMEs was €952 million during Q4 2022. This represents a decrease of €145 million or 13% when compared to Q4 2021, marking the lowest volume of gross new SME lending since Q3 2021. Gross new lending to SMEs was €4.2 billion to end December 2022, an increase of 4.3% on 2021.

The weighted average interest rates on outstanding SME loans increased over the quarter, to 4.47% one of the largest quarterly and yearly increases in interest rates since the central bank started reporting trends in the sector.

The interest rate on new SME loan drawdowns increased by 112 basis points over Q4 2022, standing at 5.23%. SME interest rates on new loans increased across all sectors over the whole of 2022. Higher than average rates were charged to the construction, transportation & storage, human health & social work, and other community and social sectors. Interest rates charged to the primary Industries during 2022 averaged 5.5%, up from 4.45% in Q1 2022 and 4.76% in Q1 2021

The total outstanding amount of credit to all Irish resident private-sector enterprises, comprising both SMEs and large enterprises, stood at €73 billion at end 2022, up €2.7 billion from end 2021 figures.

Deposits from all Irish private-sector enterprises saw an increase across the majority of sectors, up by €6.6 billion over the whole of 2022. This marks the lowest volume of year-on-year deposit growth reported in a calendar year since 2018.

Central Bank of Ireland Financial Stability Review 2023

The Central Bank of Ireland Financial Stability Review published in June 2023 found that Irish businesses have performed remarkably well during the current inflationary episode. While input costs have risen, firms have largely passed these costs on to customers and maintained or increased their profit margins. This has been facilitated by robust demand, even as real household incomes fell. SMEs in aggregate appear resilient under baseline projections, but profit margins may be vulnerable to a decline in aggregate demand.

Although circa half of SMEs have no financial debts and the sector has deleveraged substantially over the last decade, debt service costs are rising for indebted firms and small firms remain sensitive to a deterioration in credit conditions. Loan performance indicators are

not yet showing any substantial deterioration in the repayment capacity of indebted firms. The pandemic fallout continues, with insolvency rates increasing and a considerable level of accrued liabilities still outstanding.

Despite the significant pressures facing firms, economic activity has been robust. SME turnover for 2022 has returned to pre-pandemic levels for most sectors, with 77% of firms in the accommodation and food sector reporting increased turnover and unemployment levels remain low indicating the strength of the economic recovery, even in the context of rising costs. Future challenges may emerge due to ongoing inflationary pressures and, more particularly, the tapering of Government supports which have offset losses and provided considerable support to firms in recent years.

SME debt fell by 70% between 2012 and 2022. Debt in the primary sector fell by in the region of 30% in Q1 of 2022 as compared with Q1 of 2012. Irish SMEs use external financing less frequently than their European counterparts and are more likely to use internal financing to fund investment. Lower indebtedness will provide support in the face of rising interest rates, relative to other economies.

Profit Margins

With consumer demand more robust than expected in the face of very large price rises, SME profit margins have broadly held steady or increased over the period. However, they remain sensitive to a decline in consumer demand and continued cost pressures.

Inflation

Inflation rates remain higher than rates of the past two decades and are expected to remain elevated over the remainder of 2023 and into 2024. The outlook for inflation remains heavily dependent on energy prices and any additional negative shock to these could lead to a further decline in real incomes and increase the pressure on the debt servicing capacity of SMEs.

Tighter financing conditions

Many parts of the economy are reporting a tightening of financing conditions from lenders. While tighter financial conditions will impact all sectors of the economy to differing degrees, when coupled with higher interest rates, this may be contributing to a reduced appetite for borrowing among SMEs due to concerns over future ability to service debt.

Domestic Growth

While SMEs are weathering the current economic disruptions so far, weaker than expected domestic growth, coupled with a challenging international trading environment, may function as a drag on revenue growth. At the same time, firms in some sectors continue to face capacity constraints and elevated operating and input costs. Financial conditions are expected to continue tightening having a potential impact on SME investment decisions and competitiveness.

Insolvency

Following a period of exceptionally low levels of company failure, the rate of insolvent liquidation ticked upwards during the second half of 2022. 58% of companies that entered insolvency to date in 2023 were wage subsidy claimants during the pandemic. Deferred liabilities built up during the pandemic also remain substantial with over €2 billion of deferred tax liabilities still to be repaid and repayment plans outstanding still to be agreed with over 60,000 businesses. Current economic challenges arising from the conflict in Ukraine and the increased potential for debt default is reflected in domestic banks continuing to classify a high proportion of corporate loans as exhibiting an elevated level of credit risk.

Credit Supply

The latest domestic bank lending survey results, published in April 2023, showed a tightening in credit standards in Q1 of 2023. These are most evident in the interest rates being charged on new lending. Rates have increased from 4.1% in November 2022 to just under 5% in March of 2023. The results also indicate a further tightening of credit standards is to be expected. All of this is influencing lending rates with overall credit growth declining marginally. The number

of non-banks actively lending to SMEs has fallen steadily over 2022, both in new lending and in number of active lenders. Data from the Central Credit Register for Q4 2022 showed that Irish SMEs owed non-bank lenders €4.5 billion in comparison to €18.4 billion owed to banks per the SME and Large Enterprise Credit and Deposits report. The share of new lending by non-banks to SMEs decreased by 20% annually to December 2022. A total of nine non-bank lenders ceased lending in 2022.

2.14 Access to Finance

Access to finance is a critical business need. Along with liaising with the main banks on issues relating to the agri-food sector, the Department of Agriculture, Food, and the Marine (DAFM) works closely with the Department of Enterprise, Trade and Employment (DETE), the Department of Finance (DoF) and the Strategic Banking Corporation of Ireland (SBCI) to provide financial supports to small and medium-sized enterprises (SME) in Ireland. The SME sector includes farmers, fishers, foresters, and food businesses. Access to finance is vital in helping businesses to deal with challenges in the economy. Economic disruption arising from events such as Brexit, COVID-19 and most recently the conflict in the Ukraine have increased the need for SME supports. Financial supports in the form of loan schemes are delivered via approved lenders including the pillar banks, credit unions and other financial institutions.

Several loan schemes have already been delivered via this partnership to date including the Brexit Impact Loan Scheme (BILS) (incorporating the Covid Loan Scheme (CLS)) and the Covid-19 Credit Guarantee Scheme (CCGS).

Ukraine Credit Guarantee Scheme (UCGS)

The effects of the Ukraine Crisis on the Irish economy have been wide and varied. Supply chain disruptions, increases in input (including energy) costs and rising inflation have had a significant impact on businesses ability to raise much needed working capital and support long-term strategic investment. To address this, in July 2022 Government approved the drafting of legislation to allow for the creation of a successor to the COVID-19 Credit Guarantee Scheme (CCGS), to facilitate lending of up to €1.2 billion to SMEs, primary producers, and small mid-caps. Loans of up to €1 million are available. The UCGS assists businesses, including farmers, fishers, forestry and food businesses in meeting liquidity and investment needs.

The UCGS allows these businesses to spread the increased costs by making loans available for terms of up to six years. It assists with the absorption of the cost of disruption and aids their businesses to become more resilient in the face of business shocks. Personal guarantees and collateral requirements, a major disincentive for SMEs, are not required for loans of up to €250,000. The Scheme will be available until 31 December 2024.

Loan features are broadly like the COVID-19 Credit Guarantee Scheme (CCGS) in terms of loan type, tenure, and credit amount available. The CCGS saw over €700 million in lending to 9,800 businesses over the course of its deployment. These loans helped to maintain over 81,000 jobs in Ireland. The UCGS is expected to provide a similar level of aid to those businesses in need, in an effective and widely available manner that has already proved successful. It opened for applications in January 2023.

Future Growth Loan Scheme (FGLS)

The FGLS was developed by DAFM and DETE, in partnership with the DoF, the SBCI and the European Investment Fund (EIF). It was delivered through participating finance providers and made up to €800 million of investment loans available to eligible Irish businesses, including up to 40% ringfenced for the agri-food & seafood sectors.

The FGLS was established to address the need for longer-term unsecured lending. The unique features of the scheme facilitated access to finance for young and new entrant farmers, especially the cohort who do not have high levels of security. It also aimed to serve smaller-scale farmers who often do not have the leverage to negotiate more favourable terms with their banking institution. The loans were competitively priced with an initial maximum loan interest rate of 4.5% for loans less than €250,000. They were available for terms of 8-10 years and supported strategic long-term investment in a post-Brexit environment. A minimum loan amount of €25,000 applies up to a maximum of €3,000,000 per applicant.

Due to significant levels of demand, a second tranche of €500 million was launched in 2020. It reached capacity and closed on 31st March 2023. Under the €800m loan scheme, some 1,601 (46%) loans were to the agri-food sector, accounting for €237 million (31%) of the value.

Growth and Sustainability Loan Scheme (GSLS)

Following the rapid deployment of the €800m FGLS, DAFM and DETE have developed a new long-term investment loan scheme for SMEs, in cooperation with the SBCI and the EIF. GSLS builds on the success of the FGLS and addresses the lack of suitable long-term finance products available in the Irish market. As SMEs address the impact of the war in the Ukraine and recover from Brexit and the COVID-19 pandemic, they need to consider and be encouraged to invest in their business.

GSLS, delivered by the SBCI, will provide an uncapped 80% guarantee to participating on-lenders. It will make up to €500 million in funding available to SMEs, including farmers, fishers, foresters, and food businesses, at favourable terms and conditions. Under the GSLS, 70% of lending will be for strategic investments with a view to increasing productivity and competitiveness and thus underpinning future business sustainability and growth. A minimum of 30% of the lending volume will be targeted towards climate adaptation and environmental sustainability purposes with the aim of helping SMEs to invest in sustainability and energy efficiency.

Loans will be allowed for investment purposes only. Loans will be of between €25,000 and €3 million, with maximum loans to small midcaps limited to €937,500 due to State-Aid regulations. Loans will be for terms of 7 and 10 years. Loans of under €500k do not require security. Interest and capital moratoria of up to 90 days are permitted under the EIF guarantee for the scheme. The discounted interest rates reflect the significant coverage provided to the lenders under the SBCI 80% guarantee, with a preferential interest rate for Climate Adaptation and Environmental Sustainability loans.

CHAPTER 3

Agricultural Commodities and Inputs

Intermediate consumption (farm inputs) in 2022 cost **€7.92 billion**, up 29% on 2021.

Milk accounted for 41% of total agricultural output by value in 2022, with a value of **€5 billion**.

Cattle numbers in the EU27 have dropped from **79.7 million** in 2016 to **74.8 million** in 2022.

3.1 Overview

The CSO release Output, Input and Income in Agriculture, Final Estimate 2022 provides the numerical detail on the various elements which have an impact on farm income in 2022. The Output, Input and Income (OII) in Agriculture has been produced since 1990 and provides valuable data on farm outputs, inputs and the overall level of farm income through the years.

Chapter two looked at the estimated value of goods output at producer prices for livestock, livestock products and crops. It also examined the cost of intermediate consumption or inputs, including the value of subsidies and estimated the operating surplus or aggregate farm income. Here we will look at the change in volume and price which impacted how the value of gross output at producer prices and intermediate consumption changed in 2022, along with the change in gross value added at basic prices. This is the difference between the output at basic prices (the producer price plus any subsidies directly linked to a product minus any taxes on products) and intermediate consumption. It is a measure of gross income before depreciation, subsidies and taxes on production and compensation of employees. According to the OII, agriculture's gross value added at basic prices in 2022 was €4.97 billion, a 25.5% increase on 2021 figure, which in itself was a 21% increase on the 2020 figure. This increase was almost entirely due to increased prices of 23.8%, with volume increasing by just 1.8%.

Gross output at producer prices was €12.29 billion, up 27.9% in value. Again, the price increase of 27.5% was the main driver of this increase, with volume almost static at +0.1%. Intermediate consumption at €7.9 billion was up 28.9% on 2021, with volume the same as the previous year, but price up by 28.2%.

Cattle and calves are the largest livestock category, responsible for 24.6% of gross output, down from 27% in 2021. The estimated value of cattle and calves increased by 17.3% in 2022 to €3.03 billion. This increase was generated by a price increase of 17.3%, while volume was down slightly by 0.9%. Milk is the largest category of output by value, representing 41% of total agricultural output. The gross output value of milk increased significantly by 48.0% in value to €5.03 billion, and similar to cattle and calves output, the volume saw little change, up less than 1%.

Cereals saw the largest increases in gross output at producer prices, with an increase of 60% in value. This was following an increase of 50% in value in 2021. While price increase contributed most of the increased value in 2022 at 51.6%, there was also an increase in volume of 4.9%. The pig sector, which had a difficult year in 2021, saw a recovery with gross output up 11.7% in 2022 following a 14.3% increase in price, but a drop of 2.4% in volume. Poultry gross output was up by 8.9% to €204 million, mainly due to stronger prices. Potatoes saw prices increase by 6.5% but, with volume down 14.8%, the gross output was down 6.6% to €163 million.

Intermediate consumption or farm inputs in 2022 cost €7.92 billion, up 28.9% on 2021. Fertilisers saw the biggest increase in intermediate consumption costs, up a massive 99.5% to €1.2 billion, arising from a price increase of 136.7% and a volume decrease of 16.5%. In 2021 fertiliser accounted for 10% of the input costs overall but in 2022 it accounted for 15% of total costs, despite the fall in volume used. Animal feed was the largest input cost with a spend of €2.33 billion in 2022, up 29.7% on the previous year, with almost all of the increased expenditure due to increase in price. Energy and lubricants, which account for 8% of farm inputs, saw spend increase by 37.5% to €634 million, again driven by a high increase in price of 42.3%, while volume used was down 3.4%. These three items, namely fertilisers, animal feed and energy & lubricants, account for over half of spend on inputs in 2022 at 53%. Their combined cost increased from €2.86 billion in 2021 to €4.17 billion in 2022, an increase of 45.7%.

Table 3.1 *Gross Output at Producer prices, Intermediate Consumption and Gross Value Added 2022*

	Value	% Change 2022 over 2021			Share of GO/ Inputs
	€m	Value	Volume	Price	%
Gross Output at Producer Prices	**12,285.3**	**27.9**	**0.1**	**27.5**	**100%**
Cattle and Calves	3,026.8	17.3	-0.9	17.9	25%
Pigs	620.2	11.7	-2.4	14.3	5%
Sheep and Lambs	377.3	2.7	0.6	2.3	3%
Poultry	204.2	8.9	-1.0	13.3	2%
Milk	5,026.2	48.0	0.8	46.5	41%
Cereals	694.7	60.0	4.9	51.6	6%
Potatoes	163.0	-6.6	-14.8	6.5	1%
Fresh Vegetables and Fruit	324.3	n/a	n/a	n/a	3%
Forage Plants	1,307.8	17.5	-0.1	17.2	11%
Other	540.8	n/a	n/a	n/a	4%
Intermediate Consumption (Inputs)	**7,918.7**	**28.9**	**0.0**	**28.2**	**100%**
Animal Feed	2,333.3	29.7	0.8	29.0	29%
Fertilisers	1,208.0	99.5	-16.5	136.7	15%
Energy & Lubricants	634.1	37.5	-3.4	42.3	8%
Maintenance & Repairs	603.1	10.3	6.1	3.9	8%
Forage Plants	1,301.1	17.3	-0.2	17.1	16%
Contract Work	573.5	23.5	12.9	8.8	7%
Others	1,265.6	n/a	n/a	n/a	16%
Gross Value Added at Basic Prices	**4,974.8**	**25.5**	**1.8**	**23.8**	**n/a**

Source: CSO

Stock Changes on Farms

Each year the CSO calculate the estimated value and volume of stock changes on farms compared to the previous year. Cattle, sheep and crop values on farms, which increased in value in 2021, saw decreases in 2022, along with volume decreases for cattle and sheep. Pig values at farm level decreased slightly in 2021 and again in 2022, while the volume of pigs also decreased. Poultry values and volumes have remained constant over the past two years.

Table 3.2 *Estimated Value (€m) and Volume[1] (000s) of Stock Changes on Farms 2021/2022*

	2021		2022	
	Value €m	Number '000	Value €m	Number '000
Cattle	96.09	120	-21.99	-97
Sheep	18.94	149	-1.33	-8
Pigs	-0.64	35	-7.81	-143
Poultry	0.00	0	0.00	0
Crops	29.84	117	-1.25	9
Total	**n/a**	**421**	**n/a**	**-240**

[1] Volume of livestock is in heads ('000s), volume of crops is in tonnes ('000s).

Source: CSO

Livestock Numbers Ireland

The CSO issue the results of their livestock survey twice each year, in June and December. While cattle numbers vary from year to year, they also vary during the year. Most calves tend to be born in the springtime or early summer each year, resulting in higher numbers of cattle in the June census compared to the December census.

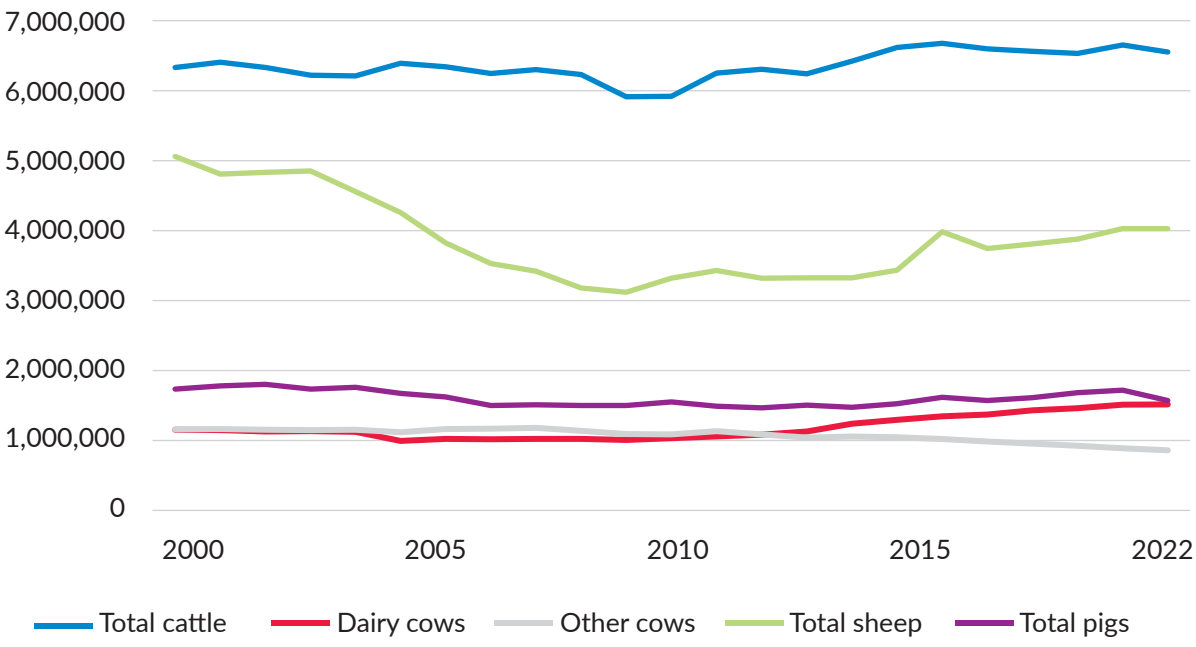
The latest results available at time of writing is the CSO December 2022 Livestock Survey and it indicates that the total number of cattle dropped by 97,500 or by 1.5% to 6,551,800 in December 2022 compared to a year earlier. However, it is slightly up on the 2020 numbers, but down compared to other recent years. Almost 30% of the cattle herd are male and 70% female. Of the 4.66 million female cattle, a little over half (2.37 million) are cows, with the remainder mostly calves and females under two years of age. Dairy cows account for 1.51 million cattle with other cows, mainly suckler cows, accounting for some 861,700 cattle. Bulls used for breeding purposes account for less than 1% of all cattle at 46,200.

In December 2022, there were just over four million sheep, similar to the previous year. The sheep flock comprises 2.7 million ewes, 89,000 breeding rams and 1.3 million other sheep. Following a difficult year for pig farmers, pig numbers have fallen by 8.4% or 143,000 pigs to 1.57 million pigs, down from 1.71 million in December 2021. Breeding pig numbers have fallen by over 12% or 18,400 to 127,500, while there are 1.44 million other pigs, mainly growing and fattening pigs.

Looking at the size of the animal herds over the past 22 years, since 2000, the numbers of cattle have increased, while the numbers of sheep and pigs have decreased. The cattle herd has increased by 3.5%, or over 220,000 animals, but the increase has not been distributed evenly across the years. The cattle herd was at its lowest since the turn of the century in 2010 and 2011, when it fell close to 5.9 million cattle and at its highest in 2017 when it reached 6.67 million. Over that time dairy cow numbers have increased by 357,500, while other cows or suckler cows have decreased by 293,500, resulting in an additional 64,000 cows in 2022 compared to 2000.

The sheep flock has fluctuated in size considerably over the past 22 years. There were just over five million sheep in 2000 and this has fallen by one million to just over four million in 2022, a drop of 20%. Meanwhile, the number of pigs were at their lowest over the past 22 years in 2013 when they had fallen to 1.47 million, down from 1.80 million in 2002, before rising again to 1.57 million in 2022, down around 10% on numbers in the first few years of this century.

Figure 3.1 *Cattle, Sheep and Pig Livestock numbers, 2000 – 2022*

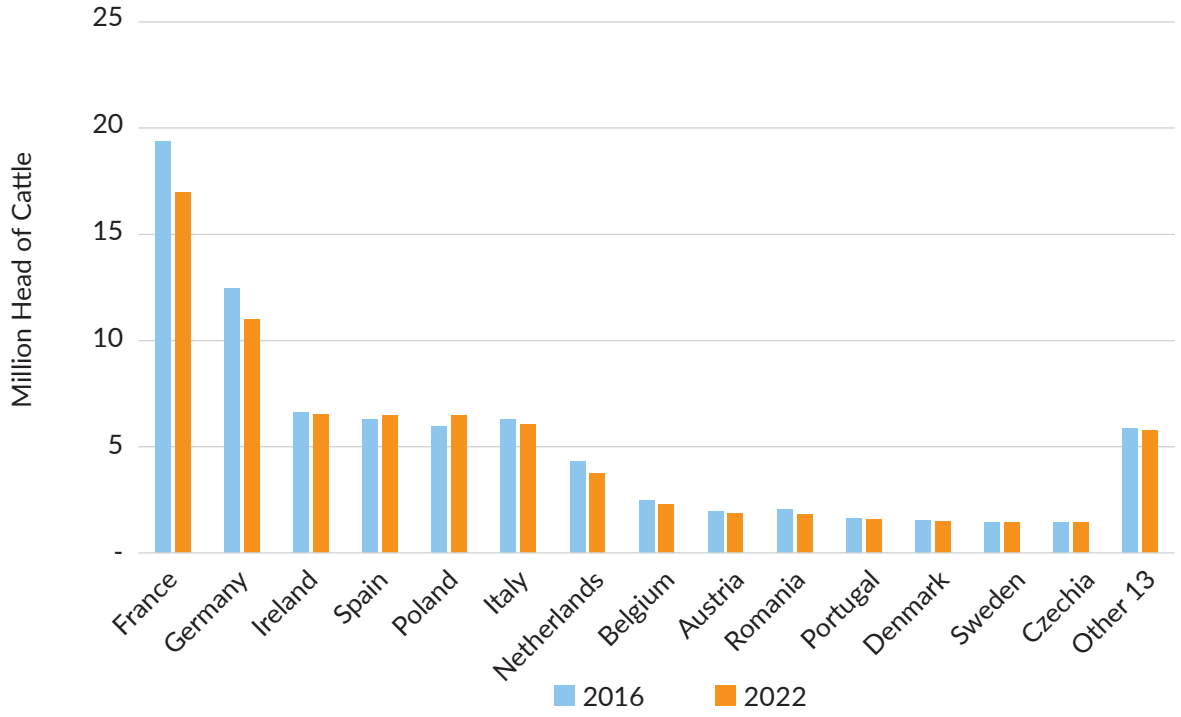


Source: *CSO Livestock Survey*

Livestock Numbers in the EU

According to Eurostat data, there are 74.8 million cattle in the 27 EU countries in 2022. This compares to 79.7 million in 2016, which was the highest number of cattle in the EU over the past decade. This reduction in cattle numbers by 6%, or close to five million head of cattle over the past six years, has been a gradual process with numbers falling each year. The largest fall in cattle numbers happened in France, where numbers fell from 19.4 million to 17 million, and Germany, where numbers fell from 12.5 million to 11 million, a drop of about 12% in both countries. The Netherlands also saw a drop of 12% from 4.3 million cattle to 3.8 million cattle. Ireland, which has the third largest herd in the EU27 countries, saw numbers fall by 1% or by around 62,000 cattle.

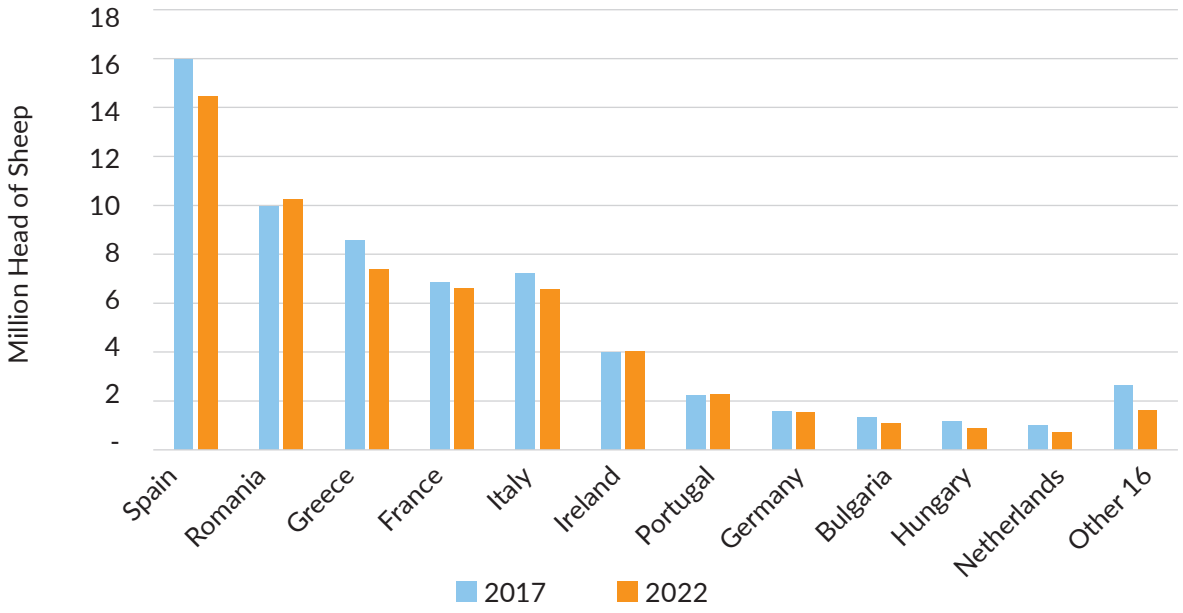
Figure 3.2 *Comparison of Irish and EU Cattle Numbers in 2016 and 2022 by Country*



Source: *Eurostat, Agriculture, Forestry and Fisheries*

There were 59.5 million sheep in the EU27 member states in 2022 and like cattle numbers they have reduced in recent years. In 2017 there were 63.6 million sheep the highest in recent years, 4.1 million more (or 6.5%) higher than in 2022. Spain, which has the largest sheep flock in the EU27, saw the largest fall in numbers from 16 million to 14.5 million, a drop of almost 10%, while Greece which has the third largest sheep flock, saw numbers drop by 1.2 million (or 14%) to 7.4 million sheep in 2022. Romania which has the second largest sheep herd in the EU27 saw their sheep numbers increase by 3% over this period, from 10 million in 2017 to 10.2 million in 2022. Ireland's sheep flock increased by 1% during this period, by 40,000 sheep to 4.02 million, the sixth largest flock in the EU27.

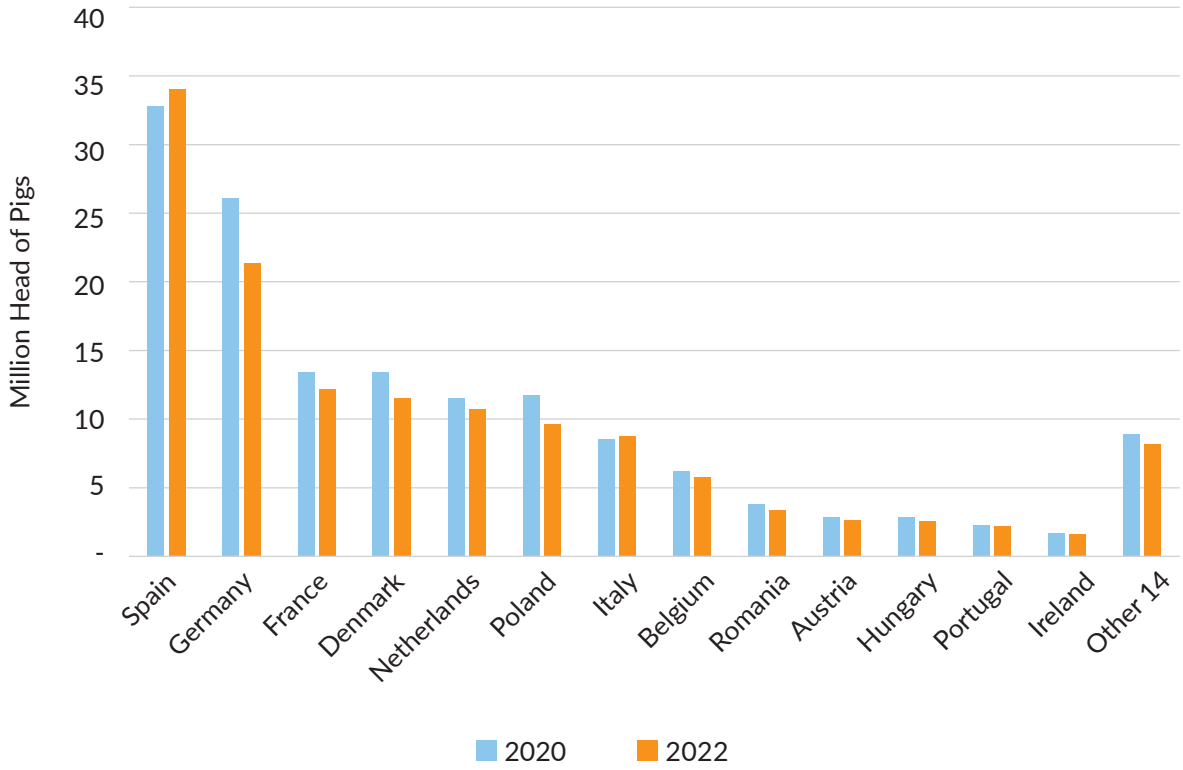
Figure 3.3 *Comparison of Irish and EU Sheep Numbers in 2017 and 2022 by Country*



Source: *Eurostat, Agriculture, Forestry and Fisheries*

In 2022 there were 134.4 million pigs in the EU27 countries with the largest number in Spain at 34.1 million, followed by Germany with 21.4 million pigs. The number of pigs were almost 146 million in the EU 27 in 2020, just somewhat higher than in 2017, the two years with the highest number of pigs in the last decade. The largest drop in pig numbers in 2022, compared to 2020, were in countries in the eastern part of the EU where swine fever saw large number of pigs slaughtered to prevent further spread of the disease and also because of low pigmeat prices throughout the EU. Germany and Poland saw numbers drop by 18% in each country, while Denmark saw numbers drop by 14%, Romania by 12% and Hungary by 10%. Ireland, which has the thirteenth largest pig herd in the EU27, saw pig numbers drop by 6.4%, or by 110,000 pigs.

Figure 3.4 *Comparison of Irish and EU Pig Numbers in 2020 and 2022 by Country*



Source: *Eurostat, Agriculture, Forestry and Fisheries*

3.2 Dairy

Ireland is currently the 8th largest dairy exporter in the world,

exporting 90%

of our dairy products.

Ireland's 16,000 dairy farmers produced

8.8 billion litres

of milk in 2022.

The average milk price in 2022 was

€56.88/100kg,

an increase of 44.6% from the 2021 price.

General Market Situation Ireland and EU

Ireland

The dairy industry in Ireland is built on the family-farm tradition, with over 16,000 dairy herds registered to supply milk, utilising close to one quarter of the grassland area of Ireland. The family story behind Irish food and drinks production is part of what makes it uniquely appealing to consumers all over the world.

Ireland is a global leader in the dairy sector in terms of the safety, sustainability, and traceability of dairy production. The quality and nutritional value of Irish milk produced from a sustainable grass-based production system gives it a key competitive advantage. According to a study from the European Commission Joint Research Centre called Evaluation of the Livestock Sector's Contribution to the EU Greenhouse Gas Emissions (GGELS), Ireland is rated as having the most carbon efficient dairy production in the European Union, along with Austria, primarily attributable to our grass-based systems of production.

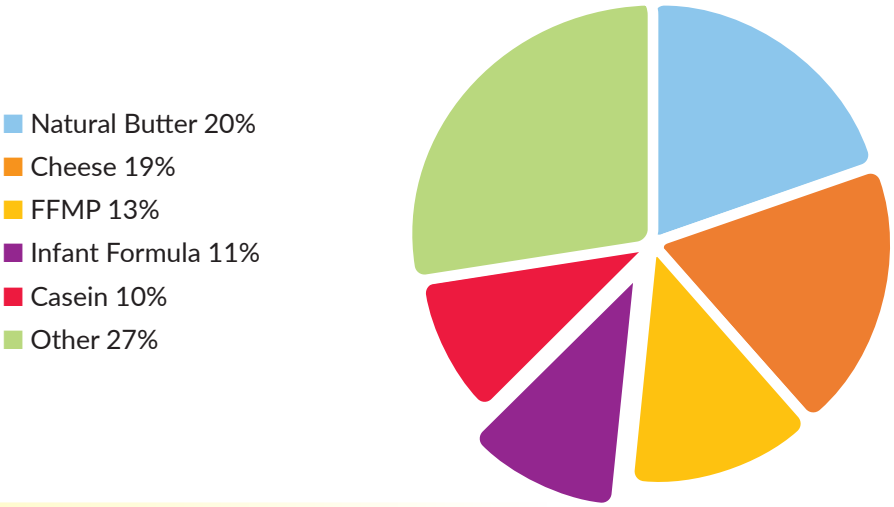
The dairy industry is one of Ireland's largest and most profitable sectors. Irish dairy exports reached €6.9 billion in 2022, accounting for 36% of agri-food exports. This represents a 32% increase in value compared to 2021. In 2022, the sector exported nearly 1.6 million tonnes of dairy products to over 120 different countries around the globe. According to ITC Trade Map Ireland is currently the 8th largest dairy exporter in the world, exporting 90% of our dairy products to the EU and beyond.

The foundation for this growth was a solid year for milk collections on Irish farms, over 8.8 billion litres of milk was produced in Ireland in 2022. This was despite lower fertiliser usage and relatively slow grass growth in the spring and early summer. There were strong market returns across the core categories of butter, cheese, and powders.

Natural butter exports were valued at €1.35 billion. While the value of natural butter exports has increased from 2021 by 43%, the volume of butter exports decreased by 14.7%. The EU, United Kingdom and North America remained the key markets for this product, accounting for 95% of exports. Exports of butter to the United Kingdom recovered in 2022 with 42,700 tonnes exported there compared to 30,000 tonnes in 2021 and 42,140 tonnes in 2020, reflecting a return to more usual trading patterns.

Exports of cheese were valued at almost €1.3 billion, a significant 22% increase in value compared to 2021. EU markets accounted for over half of this growth. While exports to the United Kingdom have fallen in recent years, exports there accounted for €364 million or 28% of total cheese exports, 60% of which were cheddar. Germany and the Netherlands both accounted for over 12% of cheese exports, while close to 6% went to Japan.

Figure 3.5 *Dairy Exports by Category, 2022*



Source: CSO

Exports of Fat Filled Milk Powders (FFMP) increased by €212 million in 2022 to €906 million, 30% up on a relatively slow performance in 2021, despite a drop of 4.1% in volume. Exports of specialised nutritional powders, incorporating the baby powders groups, increased by €95 million in 2022 to €765 million, 14% up on 2021 figures and arresting a four-year trend of declining export value. Exports of casein powders increased by €207 million in 2022 to €681 million, up 44% on 2021 export figures.

Table 3.3 *Top 5 Dairy Export Destinations 2022*

Rank	Country	€ Million	Tonnes
1	United Kingdom	€1,272	458,442
2	Netherlands	€1,020	226,556
3	United States	€676	7,406
4	Germany	€518	101,851
5	China	€447	79,467

Source: *CSO*

EU and Global Milk Production

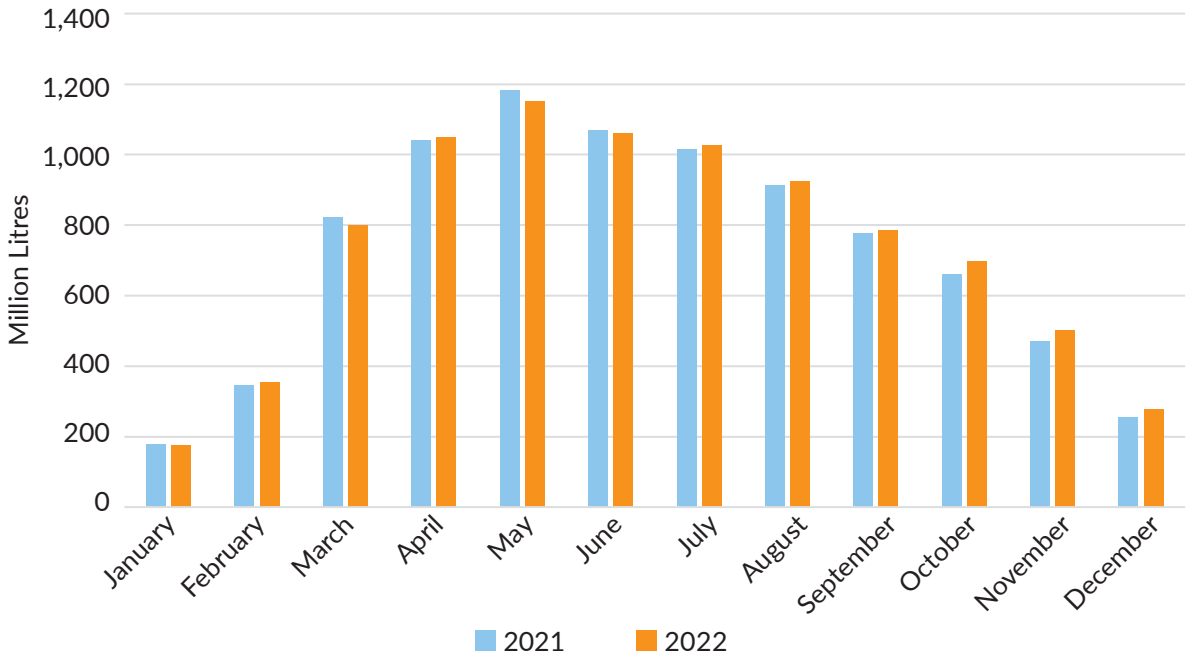
Despite expectations of a lower overall milk output, 2022 EU milk production remained stable. EU dairy exports declined in volume but recorded record highs in value terms as a consequence of high prices and limited supply. EU domestic dairy use slightly increased despite increasing food inflation.

Globally, the demand for dairy remained strong in 2022 despite initial concerns of decreasing demand linked to increased inflation and elevated prices. Inflationary prices were driven by increased input costs on energy, fuel, feed, high freight costs and a strong US dollar.

Production 2022

Ireland's domestic milk intake grew by 0.8% to slightly over 8.8 billion litres in 2022 compared to 2021. This is the lowest annual increase in domestic milk intake since milk quotas were abolished in 2015. Domestic milk intake by creameries and pasteurisers in 2014 was 5.6 billion litres.

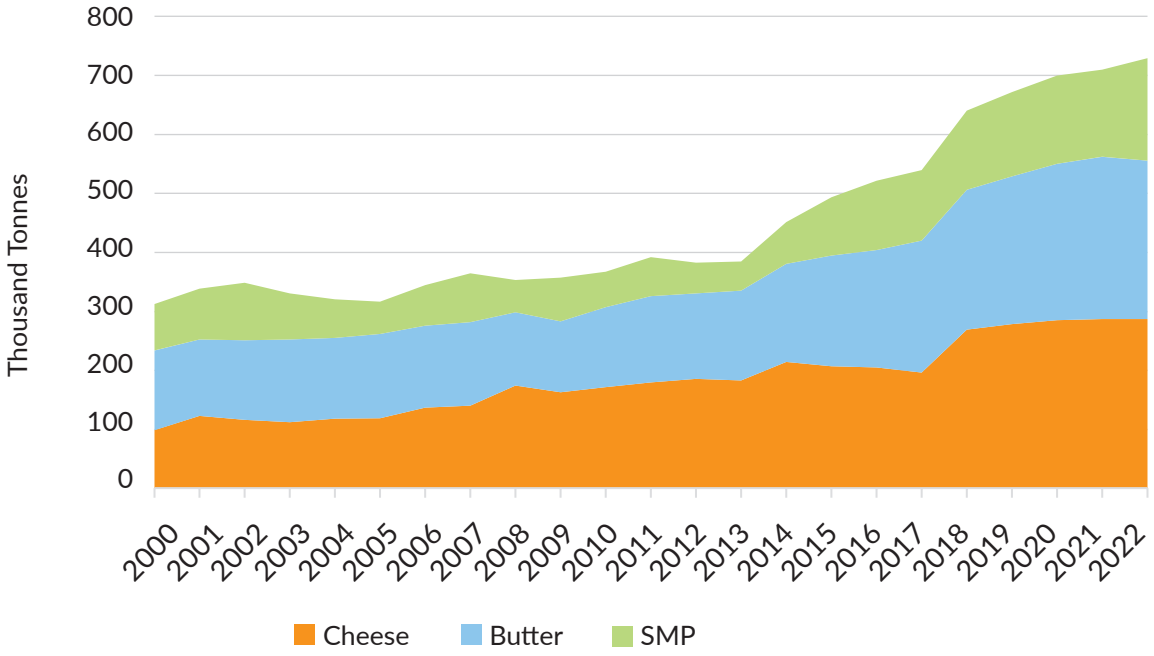
Figure 3.6 *Domestic Milk Intake by Creameries & Pasteurisers 2021 & 2022 by Month*



Source: CSO

EU milk intake reached slightly more than 144 million tonnes in 2022. Germany produced 22% of the milk followed by France at 17%, the Netherlands at 10%, with Italy and Poland at 9% each, followed by Ireland at 6%.

Figure 3.7 *Production of Irish Dairy products (Thousand Tonnes), 2000 – 2022*



Source: CSO

Prices 2022

The average 12-month price paid to Irish farmers in 2022 according to the CSO was €56.88/100kg, an increase of 44.6% from the average 2021 price, which was €39.31/100kg. In 2022, EU Commission figures show that the 12-month EU average raw milk price was €49.41/100kg, an increase of 35% from the average 2021 price of €36.52/100kg.

Figure 3.8 *Raw Milk Prices, Ireland and the EU, 2013 – 2022 (Euro/100Kg)*

Source: *EU Milk Market Observatory*

New Markets 2022

In 2022, Irish exporters delivered nearly 1.6 million tonnes of dairy products to over 120 different countries around the globe. Ireland is currently the 8th largest dairy exporter in the world, exporting over 90% of our dairy products to the EU and beyond. Irish dairy produce benefits from being the most diversified category in the Irish food and drink export category. In 2022, over 45% of Irish dairy exports were destined for markets outside the United Kingdom and the EU27.

From a market perspective, all priority regions performed strongly in value terms. Regions where a significant proportion of trade is butter, cheese and casein such as the EU, North America, and United Kingdom (average combined value growth of 46%), performed ahead of markets in Africa, Asia and Middle East (average combined value growth of 13%) where milk powders are the major export.

There was a significant increase seen in exports of the specialised nutrition powders including infant formula, particularly to the United States where reduced availability of domestic supplies saw product being airfreighted into the market during early summer 2022 to satisfy market demand.

Irish dairy exports to the continent of Africa amounted to €841 million in 2022, representing a year-on-year increase of €148 million (21%). The African continent now accounts for 12.2% of dairy exports in value terms. Irish dairy exports to Asia were just over €1 billion in value, similar to the last seven year and in 2022 accounted for 15.3% of total dairy exports.

Sustainability

Being one of the largest dairy exporters in the world, Ireland will have to pave the way when it comes to the environmental, economic, and social sustainability of our food production systems. The Food Vision Dairy Group was established in early 2022 to advance the actions for the dairy sector identified in the Food Vision 2030, taking account of the requirement for the sector to contribute to achieving the targets set for agriculture emissions in the Climate Act process.

The first priority for the Group was to chart a pathway to achieving the legally binding target of a 25% reduction in greenhouse gas emissions from agriculture by 2030, equivalent to a reduction of 5.75 MT of carbon dioxide equivalent. The Dairy Group met throughout 2022 and submitted its final report in October 2022, which has been published on DAFM's website. The report identified 19 potential measures which could contribute to reducing emissions from the dairy sector. The publication was timely as it then served to inform the Climate Action Plan 2023, which was launched in December 2022.

Highlights

- In 2022, Ireland exported dairy products to over 130 countries, amounting to a record value of €6.9 billion and 1.6 million tonnes.
- Top 5 dairy exports by value in 2022 were natural butter at €1.4 billion, cheese at €1.3 billion with cheddar at €862 million, food preparations at €902 million and infant formula at €756 million.
- Top 5 dairy product export destinations by value in 2022 were the UK at 18.5%, Netherlands at 14.8%, United States at 9.8%, Germany at 7.5% and China at 6.5%.
- Natural butter exports were €1.4 billion despite the volume of butter exports decreasing by 14.7%.
- There was a notable increase in infant formula exports to the Unites States. Exports to the United States increased from 2,400 tonnes in 2021 to 16,450 tonnes in 2022, with the value increasing from €24 million to €149 million.
- The Food Vision Dairy Group was established in 2022 to advance the actions for the dairy sector identified in the Food Vision 2030, taking account of the requirement for the sector to contribute to achieving the targets set for agriculture emissions in the Climate Act. The Group's final report identified 19 potential measures which can contribute to reducing emissions from the dairy sector.

Challenges

- The last few years have been challenging as the sector has experienced continued uncertainty regarding Brexit, coped admirably with the shocks arising from the COVID-19 pandemic and the illegal Russian invasion of Ukraine. The sector has shown remarkable resilience and continued to supply into the domestic and export markets in 2022 against this backdrop of ongoing global supply chain disruption, as well as soaring input, processing, and logistical costs.
- Despite the strength of this overall performance of Irish exports, 2022 presented a particularly challenging year in the form of increasing inflationary pressures. Muted buyer activity in some key import regions and continued uncertainty exacerbated by the war in Ukraine, are factors which will impact on prospects into 2023.

Ireland Outlook

- It is expected that there will be no increase in Irish milk production for 2023, compared to 2022. Milk production in the first half of 2023 was down 0.9% on the same period in 2022. Grass growth conditions have been somewhat unfavourable in 2023, with July being the wettest month on record in many parts of the country. Reflecting the trend of recent years, feed use increased in 2023. Dairy cow numbers in 2023 are up marginally, and milk yields per cow appear to be down slightly, relative to 2022.
- Fertiliser prices have been declining in 2023, but it remains very expensive relative to prices two years ago. The volume of fertiliser sold is likely to be lower in 2023 than in 2022. Feed prices in 2023 are likely to be about 10% higher than the 2022level. Average total milk production costs per litre in 2023 are likely to be similar to the 36 cent per litre recorded in 2022.
- With little change in total milk production costs likely, the extent of the decline in milk prices in 2023 will determine farm margins. In 2023 the average Irish dairy farm should see a net margin of close to 9 cent per litre, a decrease of over 60% on the 2022 level. This average net margin would translate into an average income level of close to €70,000 in 2023, a decrease of over 50% compared to 2022.
- In terms of global dairy product demand, demand in H1 and H2 2023 has remained sluggish, even though dairy product prices have declined considerably from their high in 2022. Chinese imports of powders in 2023 have fallen relative to 2022. The challenging cost of living situation is limiting dairy demand growth on the EU market.

Source: *Teagasc Situation and Outlook for Irish Agriculture July 2023*

EU Outlook

- The European Commission is predicting that EU milk collections will continue to decline marginally in 2023, although fat and protein levels should improve to counter this deficit.
- In 2023, cow slaughtering is likely to increase, responding to declining raw milk prices, which could also be partly compensated by increasing milk yields (assuming normal weather conditions). Despite a slight decrease in EU milk deliveries, down 0.2%, processing availability might still be kept stable thanks to higher milk fat and protein contents. The cheese and whey processing stream is expected to be favoured by the industry, due to EU export potential and relatively stable domestic cheese consumption. Butter and SMP production could decline due to the larger than usual stocks taken over from 2022, which could partially cover the increase in exports and domestic use.
- Overall, EU consumption is expected to face some consumer preference shift to lower quality products, impacting the value and not the total volume. Expected recovery in import demand in China would assist EU export growth but demand from China remains weak.

3.3 Cattle

Beef worth over
€3.05 billion
or 492,000 tonnes, was exported in 2022.

The average cold carcase weight for a steer in 2022 was
350 kilos.

The average deadweight price for R3 Steers in 2022 was €4.77/kg,
up 17% on the 2021
price of price of €4.08/kg.

General Market Situation in Ireland 2022

In 2022, the value of Irish beef exports increased by €620 million, or 25%, to reach €3.05 billion. Export volumes also increased by 36,000 tonnes, or 8%, to over 492,000 tonnes.

The United Kingdom accounted for 43% of Irish beef exports in both value and volume terms. EU markets accounted for 50% of exports by value and 45% by volume. The Philippines, Switzerland and Japan were the main non United Kingdom and EU27 markets, accounting for 4% of the remaining 7% export value.

The principal EU markets in order of value were France, Italy, the Netherlands and Germany, while in order of volume they were France, Netherlands, Italy, Sweden and Germany. Spain, Denmark and Belgium were also important destinations, along with Portugal and Poland.

Table 3.4 *Top 5 Beef Export Destinations 2022*

Rank	Country	€ Million	Tonnes
1	United Kingdom	€1,312	211,077
2	France	€393	62,377
3	Italy	€250	29,498
4	The Netherlands	€242	36,961
5	Germany	€173	20,987

Source: *CSO*

In terms of live cattle exports, a total of 286,300 head were exported in 2022, which was an increase of 38,700 head, or 16%, on the 2021 figure. Of the cattle exported live in 2022, 219,000 (77%) were male. The Netherlands was the destination for 40% of these male cattle, with 25% going to Spain, 10% to Italy and 9% to Northern Ireland. Of the 67,200 female cattle exported live, 28,500, or 42%, went to Northern Ireland, 17,500, or 26%, went to Spain with 14% going to the Netherlands and 11% to Italy. There were 209,000 cattle under one year exported, of which 56% were holstein freisian breed with a further 23% angus cattle. According to the AIM Bovine Statistics Report 2022, 2.44 million calves were born during 2022 with 1.56 million sired by a beef bull. Cork county had the most births at 452,300 or 18% of total births.

The Output value of the cattle sector in 2022 was €3,027 million, an increase of 17% on the previous year, while numbers dropped by 3%.

Table 3.5 *Output Value (€m) and Numbers ('000s) of Cattle and Calves, 2021/2022*

	2021		2022	
	Value €m	Number '000	Value €m	Number '000
Live Exports	104.57	247	127.34	285
Slaughterings	2,370.31	1,792	2,910.41	1,912
Levies	16.57		17.86	
Total Disposals	**2,491.46**	**2,040**	**3,055.60**	**2,196**
Imports	6.82	8	6.77	6
Changes in Stocks	96.09	120	-21.99	-97
Total	**2,580.72**	**2,152**	**3,026.84**	**2,093**

Source: *CSO*

General Market Situation in EU 2022

EU beef production decreased in 2022 by almost 3%, which was more than previously estimated. Among the largest producing countries, Germany declined the most followed by France and Poland. However, Spain and Ireland continued to increase production, while Italian production remained relatively stable.

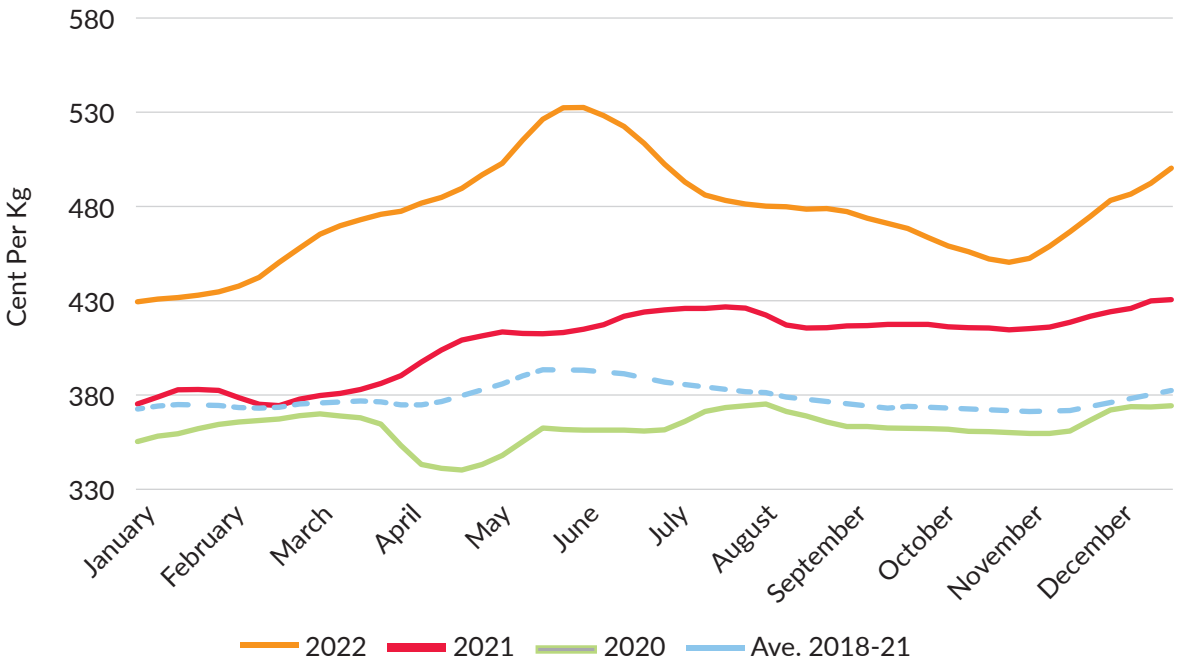
According to the European Commission, Short-term Outlook spring 2023 edition the number of suckler cows in the EU declined for the third year in succession, by an additional 240,000 head or 2.3%. At the same time, the decline of dairy cows was lower than expected, which prevented an even greater production drop. The number of male bovine cattle for slaughtering between 1 and 2 years also decreased, by 2.2%, which will have implications for beef availability in 2023.

The EU Commission in their summer edition expects that EU per capita beef consumption could be around 10 kg, or 1.7%, below last year. To some extent, this could be due to reduced consumer purchases caused by inflation.

Prices 2022

The average deadweight price for R3 Steers in 2022 was €4.77/kg. The average peaked in June at €5.33/kg and was at its lowest point in early January at €4.29.

Figure 3.9 *Deadweight R3 Steer Prices, 2018 – 2022 (Cent per kg) (Non-Zero Axis)*

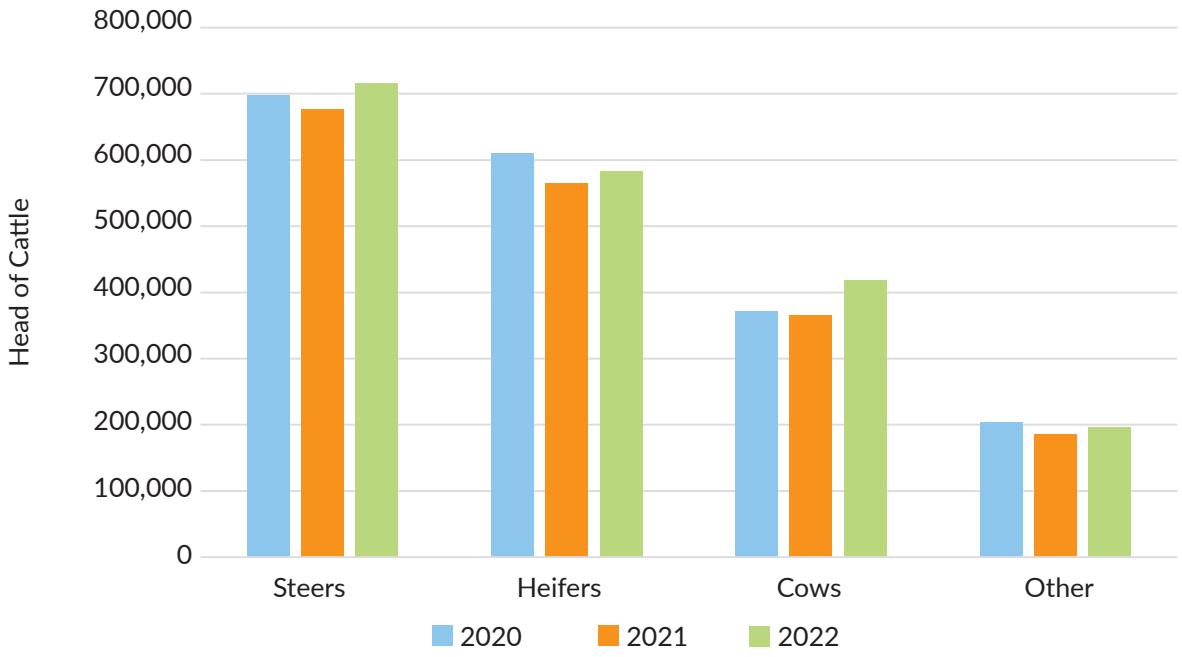


Source: *Department of Agriculture, Food and the Marine, Meat Market Report*

Slaughterings 2022

The total number of cattle slaughtered at DAFM-approved plants in 2022 was 1.82 million, which represents a 7.9% increase on the 2021 level of 1.69 million. An additional 90,800 cattle were slaughtered at Local Authority approved abattoirs (down from 105,100 in 2021), bringing the total number of cattle slaughtered in 2022 to 1.91 million. This compares to a total of 1.79 million in 2021, an increase of 6.6%.

Figure 3.10 *Total Bovines Slaughtered by Type, 2020 - 2022*

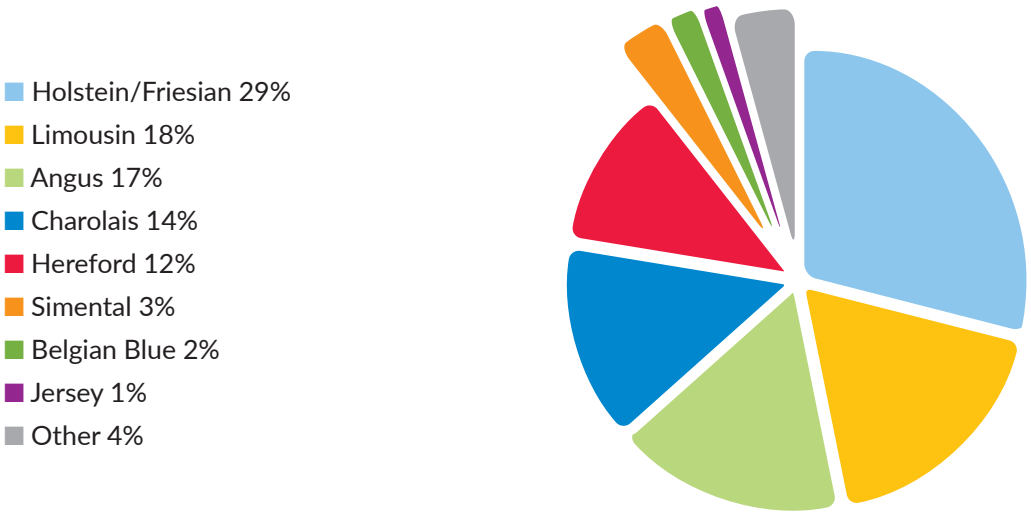


Source: CSO

Close to three in ten of all bovines slaughtered at DAFM-approved plants during 2022 were holstein friesian breed at 527,200 head, up 17% on 450,350 in 2021. Limousine breed cattle accounting for less than one fifth of slaughterings at 325,150, while angus (17%), charolais (14%) and hereford (12%) made the up the vast majority of other cattle breeds slaughtered at DAFM-approved plants in 2022. A similar number of male and female cattle are slaughtered in DAFM-approved plants. However, in Local Authority approved abattoirs, close to three quarters of the animals slaughtered were female, with one quarter of them of limousine breed, 18% hereford, 16% charolais and 15% angus.

According to the Beef Carcase Classification & Price Reporting Annual Report 2022 the average cold carcase weight for a steer in 2022 was 350kg, down from 356kg in 2021 and 360kg in 2020. Over the past 10 years the average weight has been 354 kg. The average cold carcase weight for heifers in 2022 was 310kg and, similar to the steers, was down on 2021 when it was 313kg and 318kg in 2020. The average weight over the past 10 years for heifers is 311kg.

Figure 3.11 *Cattle Slaughtered at DAFM approved Slaughter Plants by Breed 2022*



Source: *DAFM AIM Bovine Statistics Report 2022*

According to Eurostat, 621,420 tonnes of Irish bovine meat was produced in 2022, accounting for 9.4% of total EU27 slaughtering. France slaughtered the largest quantity of bovine meat, at 1.36 million tonnes, accounting for 21% of EU27 total, followed by Germany at 15%, Italy and Spain at 11%, Ireland at 9% and Poland at 8%.

Figure 3.12 *Proportion of Total EU27 Bovine Slaughtering by Member State, 2022*

Source: *Eurostat*

New Markets 2022

China

A countrywide ban on Irish beef exports was imposed by China customs in May 2020 following the detection of an isolated case of atypical BSE. In January 2023, after intensive engagement at technical, diplomatic and political levels, DAFM was advised of the resumption of Irish beef exports to China with immediate effect.

Singapore

An updated veterinary health certificate (VHC), which enhanced access for Irish beef and beef products to Singapore, was published in February 2022.

Saudi Arabia

A revised VHC enhancing access, by removing the age limit on Irish beef exports, was announced in April 2022.

Philippines

Industry was advised in June 2022 that the bilateral VHC had been updated to reflect Ireland's improved BSE risk status and align it with EU rules on specified risk material.

Cambodia

Agreement on a bilateral VHC to accompany exports of fresh/chilled/frozen meat, minced meat, meat preparations and meat products derived from cattle, sheep and swine was announced in December 2022.

Sustainability

There is an increasing demand from consumers for meat which is produced sustainably. DAFM overseas trade missions, and Bord Bia marketing and promotional activities highlight the grass-fed, low carbon nature of production systems prevalent in Ireland.

Beef and sheep farming account for the majority of farm enterprises in Ireland and contribute significantly to social and economic sustainability of rural areas. Most are heavily reliant on direct payment supports and economic viability is very often challenging. While many farms operate extensive grazing systems, there is potential for improvement in productivity and competitiveness, while also addressing environmental impacts.

The Food Vision Beef & Sheepmeat Group was established to advance the actions for the beef and sheep sectors identified in the Food Vision 2030 strategy, taking account of the requirement for the sectors to contribute to achieving the targets set for the agriculture and land use sector in the Climate Action Plan 2023.

The Group's initial task was to report to the Minister setting out how emissions associated with the beef sector can be reduced. This report was submitted at the end of November 2022 and its publication was timely as it then served to inform the Climate Action Plan 2023, which was launched in December 2022.

DAFM has launched three support schemes to date in 2023 to enhance the economic and environmental sustainability of the beef sector.

The Suckler Carbon Efficiency Programme (SCEP) supports beef farmers in undertaking various actions to improve the environmental sustainability of the national beef herd. These actions include maintaining a proportion of high genetic merit animals on their holdings, pursuing a targeted female replacement strategy, genotyping selected animals and the submission of weighing data on animals born on the holding. The SCEP aims to build on the gains achieved in recent years by previous schemes, such as the Beef Data and Genomics Programme, in improving the genetic merit of the Irish suckler herd.

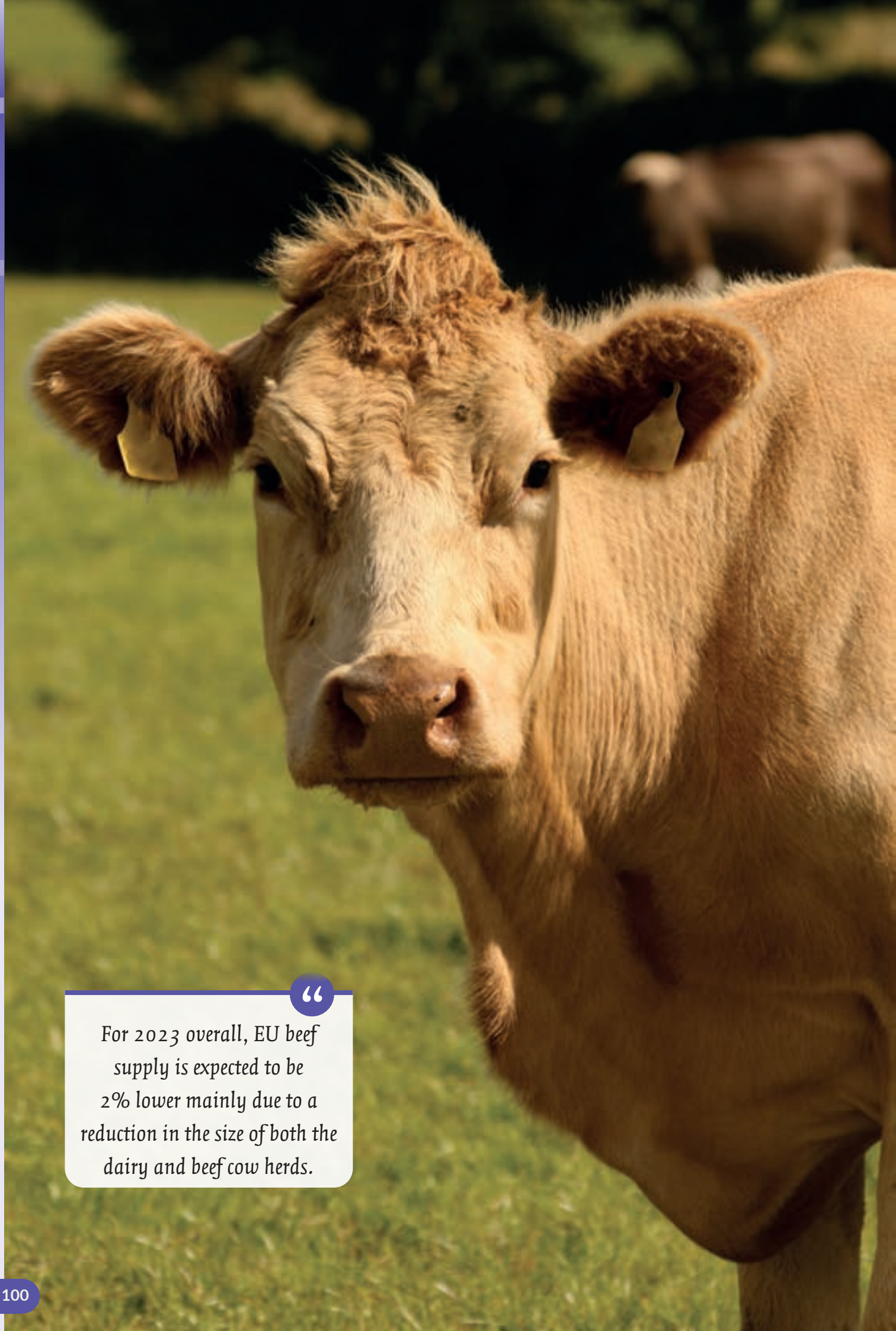
The National Dairy Beef Welfare Scheme supports farmers who are rearing progeny from the dairy herd to make better decisions through better quality data on herd performance. The policy objective is to increase the economic and environmental efficiency of the beef from the dairy herd, and to facilitate further the integration of the dairy and beef sectors. Participants must weigh a minimum of five eligible calves and submit weights to the Irish Cattle Breeding Federation. The objective of the National Beef Welfare Scheme is to further increase the economic efficiency of and enhance animal health and husbandry on suckler farms. Participants must arrange testing for IBR in their herds and carry out meal feeding of calves before and after weaning.

Highlights

- The value of beef exports in 2022 increased by 25%, to reach €3.05 billion. Export volumes increased by 8%, to over 492,000 tonnes for the year.
- In 2022, the average price of R3 steers was €4.77/kg, which was 17% above the 2021 average price of €4.08/kg.
- The total number of cattle slaughtered at both DAFM approved and Local Authority meat plants in 2022 was 1.91 million, which represents a 6.6% increase on 2021 levels of 1.79 million.

Challenges

- According to the 2022 Teagasc National Farm Survey Preliminary Results, the market income (before direct payments are included) is less than zero on cattle rearing farms, meaning that on average, these farms do not make a profit from production and are heavily dependent on financial support. Although average direct payments are lowest on these cattle rearing farms, the reliance on these payments and their overall contribution to Family Farm Income (FFI) was highest at 152% in 2022. This indicates that the average suckler farm used over €4,900 of their total direct payments of €14,309 over the course of the year to cover the farm's operating loss.
- Reliance on direct payments continued to be comparatively lower (although still high) on the average cattle finishing farm in 2022, with a ratio of direct payments to FFI of 86%.
- While the number of cattle farmers having debt is relatively low at 27% of cattle other farms and 35% of cattle rearing farms, those who are carrying debt have a relatively high debt to income ratio at about 2.13 compared to other farm systems such as dairy, where the debt to income ratio is 0.77.
- It should be noted that 44% of cattle rearing and finishing farm-holders also worked off-farm in 2022.
- Based on this Teagasc analysis, viability varies across production systems but performance on drystock systems remains challenging. Over a third of cattle rearing farms (36%) were classified as vulnerable and a similar level (35%) of cattle finishing farms were classified as vulnerable in 2022.



> *For 2023 overall, EU beef supply is expected to be 2% lower mainly due to a reduction in the size of both the dairy and beef cow herds.*

Ireland Outlook

Beef Prices

- In the first half of 2023, Irish finished cattle prices were 9% higher than in the first half of 2022. In 2023, Irish finished cattle, weanling and store prices are forecast to increase by 5% relative to 2022.
- United Kingdom prices are expected to increase in 2023 largely due to the contraction in UK beef supply being ahead of the decline in UK consumer demand.

Farm Income

- Teagasc is forecasting that Family Farm Income (FFI) on cattle rearing farms will increase by 15% on cattle rearing farms in 2023 and 5% on cattle finishing farms.

Production

- Irish prime beef production in the first half of 2023 was approximately 4% lower than in the first half of 2022. For 2023 as a whole, Irish prime beef production is forecast to decrease by 2% compared to 2022.
- Beef production is expected to peak in the third quarter of 2023 as high feed prices may delay cattle finishing on some farms.

Input Costs

- According to Teagasc, feed prices remain high, but fertiliser prices have declined in the first half of 2023, although remaining well above historical levels.
- While direct costs are forecast to be 2% lower in 2023, overhead costs are forecast to be 2% higher.
- Total costs of production on cattle rearing and finishing enterprises are expected to be unchanged in 2023.

EU Outlook

Supply

- EU beef supply declined by almost 4% in the first quarter of 2023 relative to same period in 2022. For 2023 overall, EU beef supply is expected to be 2% lower mainly due to a reduction in the size of both the dairy and beef cow herds.
- EU beef exports are expected to decrease by 5% because of more competition in high-value markets and higher EU prices. EU imports of beef are expected to increase in 2023.
- United Kingdom beef production is expected to be almost 2% lower in 2023 relative to 2022. Ireland is the largest supplier of beef to the United Kingdom, with Irish product continuing to be a mainstay in that market.

Demand

- Total EU domestic use of beef is forecast to be lower in 2023 relative to 2022, as high inflation, particularly in meat prices, is negatively affecting consumer demand in the EU and United Kingdom.
- Low economic growth in the United Kingdom impacts negatively on demand for beef. However, EU demand and higher prices for other meats should support United Kingdom beef prices.

3.4 Sheep and Lambs

One-third of our sheepmeat exports go to France, valued at **€147 million** in 2022.

Sheep slaughtering increased by 7.6% in 2022 to **3.2 million head**.

The average sheep slaughter price of €6.70/kg in 2022 was **48% higher** than the average price of €4.60 in 2019.

General Market Situation

Sheepmeat exports

Sheepmeat export values increased in 2022 by 18% or €69 million, from €386 million in 2021 to €455 million in 2022. Volume grew by 8,200 tonnes, from 58,250 tonnes in 2021 to 66,450 tonnes an increase of 14%.

While Ireland exported sheepmeat to more than 30 countries, the top ten countries accounted for 95% of the volume and 97% of the value of exports. France accounted for just less than one-third of all sheepmeat exports with 20,750 tonnes valued at €147 million. Germany was the second largest market valued at €78 million, while the United Kingdom was in third place. Sweden, Switzerland, Belgium, the Netherlands, Italy, Denmark and Canada completed the top ten destinations for our sheepmeat exports.

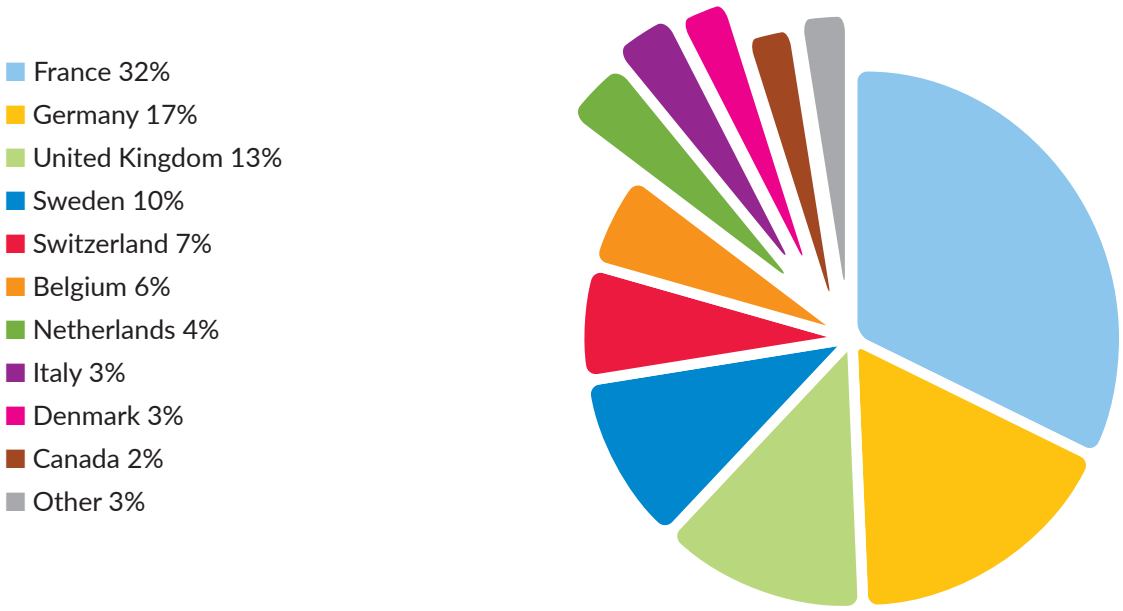
Table 3.6 *Top 5 Sheepmeat Export Destinations 2022*

Rank	Country	€ Million	Tonnes
1	France	€146.8	76,442
2	Germany	€77.7	60,145
3	United Kingdom	€57.6	22,649
4	Sweden	€47.5	19,764
5	Switzerland	€31.6	16,187

Source: CSO

Exports of sheepmeat to the United Kingdom, which had declined by about 40% in volume between 2019 and 2021, recovered slightly in 2022 with export volumes up 16% to 10,600 tonnes, but still well below the 14,800 tonnes exported there in 2019.

Figure 3.13 Proportion of Sheepmeat Exports by Country 2022

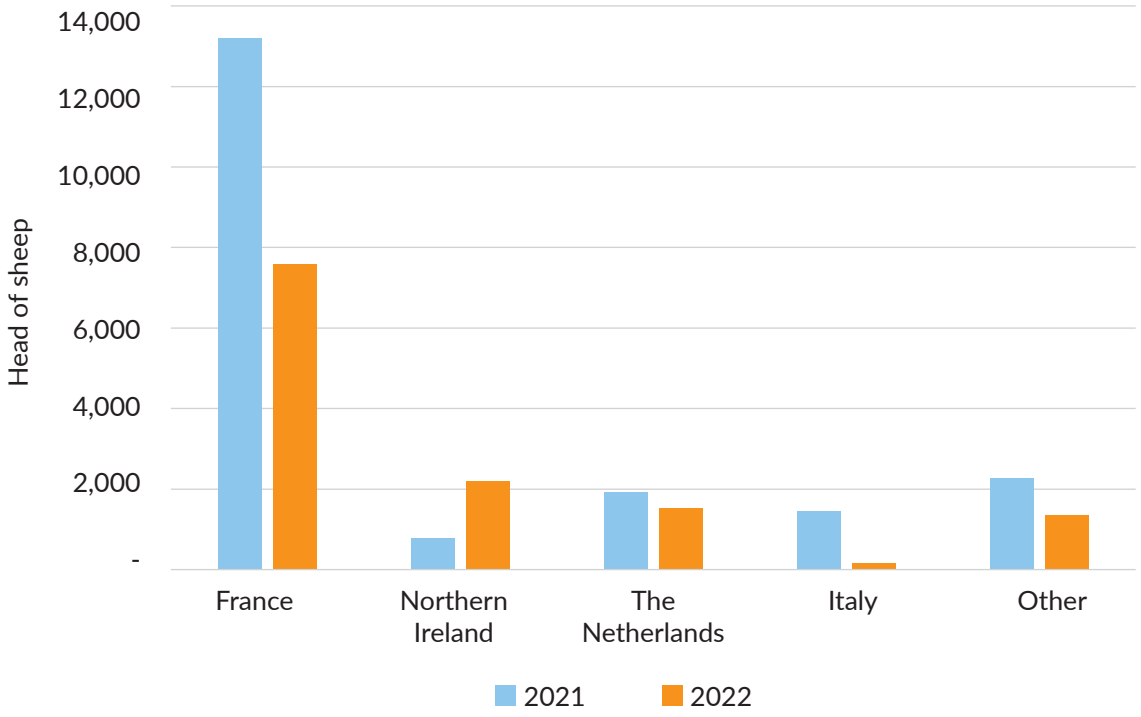


Source: CSO

Live Sheep Trade

Live sheep exports decreased by 35% in 2022, with a total of 13,000 animals exported in comparison to around 20,000 sheep in the previous year. The largest export market destination in 2022 was France, with some 7,600 animals exported, down from 13,200 in 2021. Northern Ireland, the Netherlands and Italy are the main destinations for live sheep exports, along with France, where about 60% of the live sheep exports go. Ireland imports a large number of sheep and in 2022 a total of 422,160 animals were imported, almost all from Northern Ireland.

Fig 3.14 *Live Sheep Exports by Country 2021 and 2022*



Source: *DAFM, Meat Market Report*

Output Value

The output value of the sheep and lamb sector in 2022 was €377 million, a 3% increase on 2021 output figures, while sheep numbers remained relatively static. Live exports of sheep and lambs were down by 35% in 2022 compared to a year earlier while live imports were up 15%.

Table 3.7 *Output Value (€m) and Numbers ('000s) of Sheep and Lambs, 2021/2022*

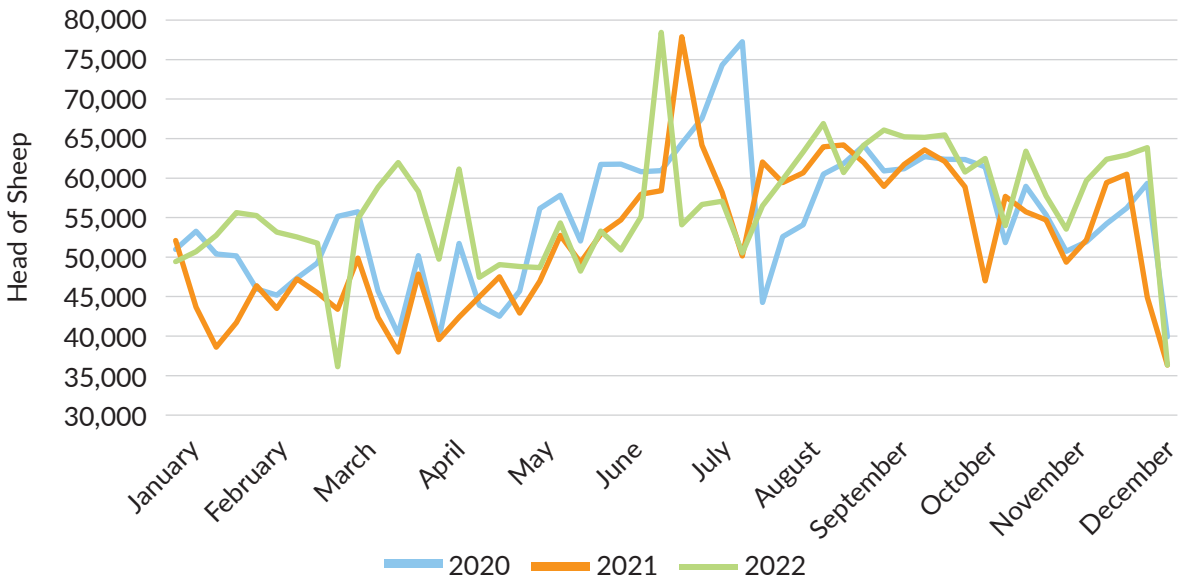
	2021		2022	
	Value €m	Number '000	Value €m	Number '000
Live Exports	2.46	20	1.67	13
Slaughterings	391.83	2,972	431.68	3,197
Total Disposals	**394.30**	**2,991**	**433.35**	**3,210**
Imports	45.92	368	54.75	422
Changes in Stocks	18.94	149	-1.33	-8
Total	**367.32**	**2,773**	**377.27**	**2,779**

Source: *CSO*

Sheep Slaughtering

According to the CSO Livestock Slaughtering data, sheep slaughtering increased by 7.6% in 2022 to 3.2 million head, of which 85% or 2.7 million were lambs. Similar to cattle, sheep can be slaughtered either in DAFM-approved plants or in Local Authority approved abattoirs. In the DAFM approved plants, slaughtering increased by 7% in 2022 to 2.92 million head comprised of 1.63 million spring lambs (56%), 0.91 million hoggets (31%), with the balance comprising of 0.39 million ewes and rams.

Figure 3.15 *Weekly Sheep Slaughter Levels at DAFM Approved Slaughter plants 2020-2022*



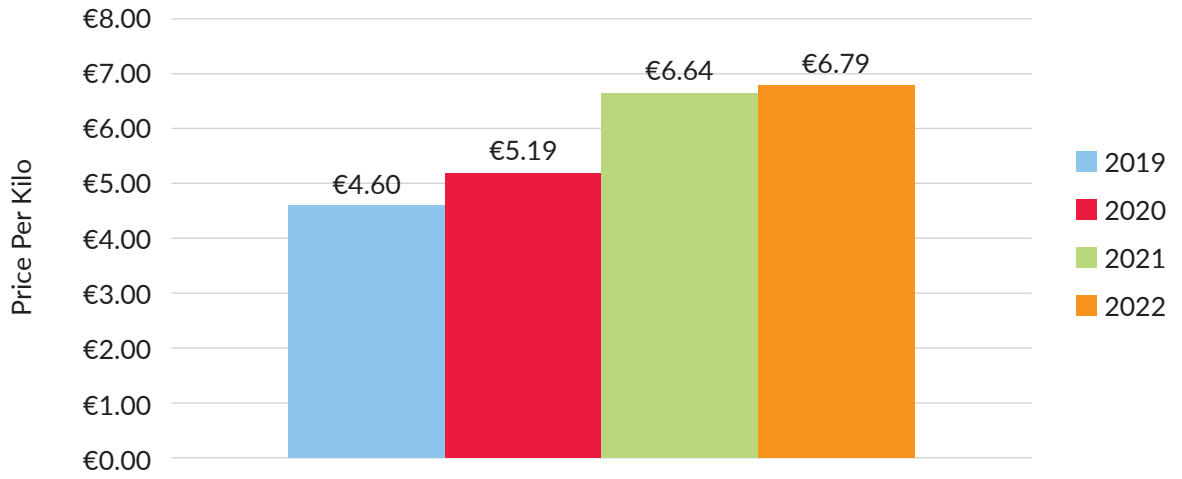
Source: *DAFM, Meat Market Report*

Prices

In line with other systems, there was a sharp increase in production costs on sheep farms in 2022. Direct costs increased by 22%, while overhead costs rose by 26%, In terms of direct costs, the largest component, expenditure on concentrate feed, increased by 27% in 2022.

The national average sheepmeat price of €6.79c/kg in 2022 was 2% above the 2021 average price of 6.64c/kg. The higher Irish price in 2022 reflects higher prices in the EU for heavy lamb, which are expected to persist into the medium term. Lamb prices in 2022, when compared to the previous two-year average prices remained at levels, well ahead of 2021, 2020 and earlier years.

Figure 3.16 *Ave Sheep Prices 2019 - 2022*



Source: *DAFM, Meat Market Report*

EU Markets

EU heavy lamb prices remained at unprecedented high levels in 2022, fluctuating between €7 and €7.50 per kg. After falling at the beginning of the year, prices again reached record levels during Easter until the beginning of July, followed by a slight decline. The main reason for the high price level was low domestic supply and a sustained demand within the EU.

In 2022, the EU production of sheep and goat meat decreased by 0.6% as Ireland and Romania increased slaughterings, while other major producers reported noteworthy decreases. EU imports of sheep meat increased by almost 23% in 2022 with New Zealand, the United Kingdom and Australia the main sources. Increased imports from New Zealand are also expected in 2023 because of lower Chinese demand and less logistical hurdles. Overall, EU imports could grow by additional 8%, boosted by more competitive United Kingdom and Australian shipments.

Sustainability

Based on the results of the most recent National Sheep and Goat Census, a total of 4.01 million sheep were kept across 42,215 active registered herds in the country at the end December 2022. Of those respondent active herds, sheep were kept on 35,555 at the time of the census.

Sheep farming contributes to both economic and environmental sustainability, particularly on more marginal land, with sheep grazing being an important land-management tool in parts of the country where land usage options are relatively limited.

Animal welfare is important for sustainability. Funded under Ireland's CAP Strategic Plan, the Sheep Improvement Scheme supports sheep farmers in carrying out specific management actions, which exceed mandatory measures, to improve animal health and welfare in their flocks. The targeted welfare areas include lameness control, parasite control, flystrike control, genetic improvement and appropriate supplementation. Beginning in 2023, it replaced the Sheep Welfare Scheme with an increased payment rate of €12 per eligible breeding ewe for completing flock welfare measures on a renewable annual contract over a maximum of five years.

The Scheme allows for the collection and generation of valuable data on welfare statistics and practices in sheep farming in Ireland. The data generated by this Scheme makes a significant contribution to the Irish sheep industry in terms of its ability to provide large-scale data on welfare in Irish flocks.

In terms of economic sustainability, according to Teagasc National Farm Survey 2022 Preliminary Results survey data, 22% of sheep farms were viable in 2022. The proportion of sheep farms found to be sustainable was 42%, with 36% classed as vulnerable. Some 45% of sheep farmers are also employed off-farm and in 59% of sheep farm households, either the farm holder or spouse is employed off-farm.

New Markets 2022

Europe continues to be the main market outlet for Irish sheepmeat; however securing access to the widest range of potential markets continues to be a key priority. DAFM and Bord Bia continue to engage closely with sheepmeat processors in developing market access.

Highlights

- In 2022, the value of sheepmeat exports increased by €68 million, or 18%, to reach €454 million. Export volumes likewise increased by 14% to over 66,000 tonnes for the year.
- The average 2022 price of €6.79c/kg was 2.2% above the 2021 average price of €6.64c/kg. This was the continuation of an upward trend evident since 2019, when the average annual sheep price was €4.60c/kg.
- Slaughtering increased by 7% in 2022 to 2.92 million sheep, of which with 1.63 million head were spring lambs.

Challenges

- Lamb is a high cost protein relative to beef, pork and chicken and is therefore more exposed to changes in consumer behaviour, both in the domestic market and in key export markets. According to Bord Bia, domestic consumption of lamb accounts for approximately 15% of total sheepmeat production with the balance being exported, primarily to Europe. This dependency on exports leaves the Irish sheep sector more exposed to shifts in the global marketplace than some of our European competitors who are much more focused on domestic markets.
- Increasing global competition generally will be a challenge for the Irish sheepmeat sector in the longer term, as countries such as New Zealand and Australia dominate the global market. A significant gap between EU prices and those in New Zealand and Australia will remain, reflecting the lower production and labour costs of those two countries, and lower pressure from the world market according to the EU Agricultural Outlook. The price attractiveness of the EU market is likely to lead to increased imports (+12%) particularly from traditional suppliers such as New Zealand and the United Kingdom.
- Irish sheep farms have experienced a 5% fall in lamb prices so far in 2023 and, as with other farm enterprises, production costs on sheep farms remain at elevated levels. The 2023 lamb crop in Ireland is expected to contract in 2023, with higher ewe cullings, reports of reduced concentrate feeding due to high costs and reports of a poorer scanning ratio on some farms. Consequently, overall output is expected to fall. Bord Bia analysis indicates that an additional 60,000 to 70,000 hoggets were carried into 2023 for processing when compared to 2022 levels.
- Sheep farm incomes had been on an upward trajectory in recent years. However, in 2022, although output values remained relatively high, increased input costs (up 24%) and squeezed margins led to a sharp decline of 21% in average Family Farm Income.

Ireland Outlook

- Average Irish lamb prices for 2023 to date are 5% lower than in 2022, but still remain well above the 5-year (2018-2022) average price level. Annual average lamb prices are forecast by Teagasc to remain modestly positive for the year overall.
- Margins earned from sheep production in 2023 are forecast to remain on par with 2022 levels, but down from the record levels achieved in 2021. An increase in average production costs will not be offset by increased output value. Teagasc is forecasting that sheep farm incomes in 2023 will increase by about 5%, to an average of €17,300, boosted by ACRES payments and additional income from cattle enterprises on these farms.
- Based on CSO slaughter data, for the period January to May 2023, the number of sheep slaughtered was almost 4% higher when compared with the corresponding period in 2022. In January to May 2023, 28,300 tonnes of sheepmeat were produced: up 5% on the corresponding period for 2023. Despite a marginal increase in output volume in 2023 to date, it is forecast that overall factory supplies will remain close to the 2022 level. Coupled with marginally higher prices, sheep output value is forecast to remain modestly positive for 2023.
- Direct costs of production on Irish sheep farms are dominated by concentrate, pasture and forage costs. In 2023, concentrate feed prices have been higher than in 2022 But fertiliser prices have declined slightly. Higher feed prices are expected to lead to an overall increase in the feed bill, which will be partially offset by lower prices for other inputs, resulting in an increase in total costs of production for 2023.

EU Outlook

- Despite positive EU production growth in Q1, driven by earlier timing of religious celebrations, EU sheep meat production is expected to decline slightly (by approximately 2%) in 2023. The historically low EU sheep flock has pushed slaughtering down. More sheep meat imports from New Zealand and the United Kingdom are expected in 2023, due to favourable lambing conditions and high EU prices.
- EU sheepmeat demand has remained relatively stable. The price attractiveness of the EU market is likely to lead to increased EU sheepmeat imports from the New Zealand and the United Kingdom. For the period January to May 2023, imports of sheepmeat into EU from New Zealand are over 19% higher than in the same period in 2022, while imports from the United Kingdom are 14% higher.
- EU sheep meat consumption has been revised marginally upwards (+1%). Despite being the most expensive type of meat, European consumption of sheepmeat is favoured by its cultural and religious positioning within consumer baskets. EU heavy lamb prices for the year to date are 2% above the same period in 2022 and are forecast to stabilise for the remainder of 2023.

3.5 Pigmeat

The average slaughter price for pigmeat in 2022 was **15% higher** than the 2021 average.

Four of the top five destinations for pigmeat exports are outside the EU, namely **United Kingdom, China, Australia and Japan**.

The Pig & Poultry Investment Scheme provides **40% grant funding** on eligible expenditure up to a maximum investment ceiling of €500,000.

General Market Situation

Ireland

The Irish pigmeat sector supports approximately 8,000 jobs spanning production, slaughter, processing, feed manufacture and services. Price volatility was a significant issue for the sector in 2022, highlighting the cyclical nature of prices in the sector. This in tandem with the input cost crisis on foot of the illegal invasion by Russia of Ukraine, had put significant pressure on the sector in 2022. This was recognised by DAFM and significant support of more than €17 million was provided through the Pig Exceptional Payment Schemes.

The value of pigmeat exports have continued to grow over the past number of years and the value of exports in 2022 at €956 million were 30% up on the 2016 exports of €734 million. In 2022 there was an increase of 2.1% in exports over 2021, in terms of value (+€19.8 million) and a decrease of 2% in volume, at 285,700 tonnes.

Table 3.8 *Top 5 Pigmeat Export Destinations 2022*

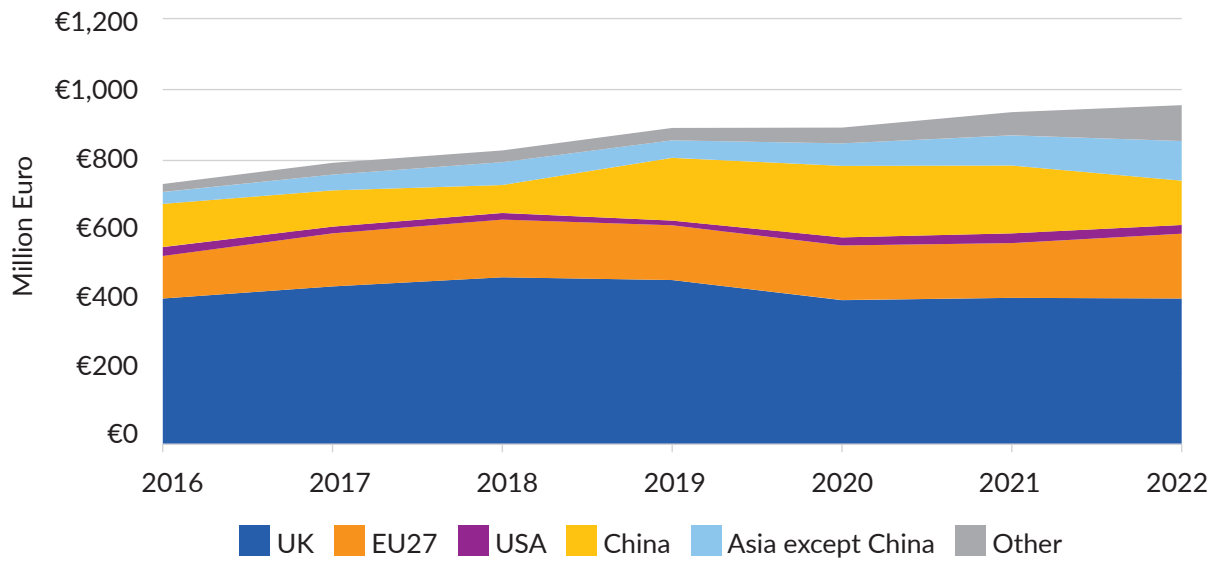
Rank	Country	€ Million	Tonnes
1	United Kingdom	€410.7	20,741
2	China	€125.2	11,891
3	Australia	€68.7	10,635
4	Denmark	€58.7	6,576
5	Japan	€56.5	2,136

Source: *CSO*

The share of total value of exports to the United Kingdom have fallen from 56% in 2017 to 43% in 2022, with other third country exports accounting for 38% of the value, up from 25% in 2017. Diversification and growth are evident in a number of markets, notably Australia, up 48% in value in 2022 to €69 million, South Korea up 42% to €28 million, Philippines up 72% to €24 million and Poland up 109% to €15 million.

According to TRACES, in addition to the export of pigmeat, 440,400 live pigs were exported in 2022, up 0.5% on 2021. The main destination for these pigs was Northern Ireland. Other countries featured included Spain, Italy, Poland, Czech Republic & Germany. Exports to other markets are smaller in number and primarily for breeding purposes.

Figure 3.17 *Value of Pig Meat Exports by Region, 2016-2022*



Source: *CSO*

The output value of the pigmeat sector in 2022 was €620 million, up from €555 million in 2021, which is a 12% increase, while the number of pigs was down 6%.

Table 3.9 *Output Value (€m) and Numbers ('000s) of Pigs 2021/2022*

	2021		2022	
	Value €m	Number '000	Value €m	Number '000
Live Exports	57.52	465	62.18	438
Slaughterings	502.47	3,690	570.37	3,636
Total disposals	**559.99**	**4,155**	**632.54**	**4,074**
Imports	3.94	32	4.50	32
Changes in Stocks	-0.64	35	-7.81	-143
Total	**555.41**	**4,158**	**620.23**	**3,899**

Source: CSO

EU

EU pigmeat production, as compiled by the European Commission, decreased by 5.1% in 2022, as was the case in 2021. Spain is the largest pigmeat producer in the EU with 24% of the market share, while Germany accounts for 20% and France 10%. However, pigmeat production has decreased by 2.9% in Spain, 9.2% in Germany and 1.4% in France.

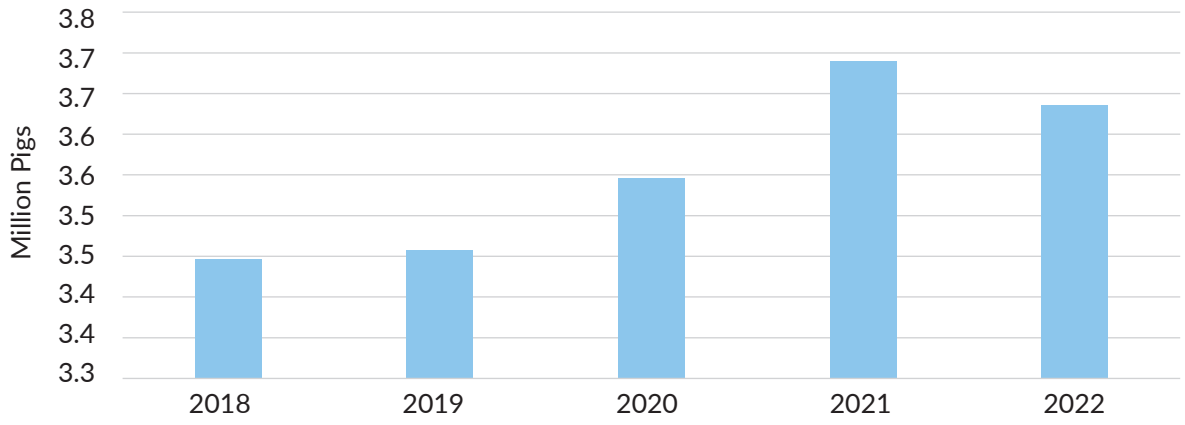
According to European Commission pigmeat trade data, the EU exported about €14 billion of pigmeat in 2022, down 6% on 2021. The five largest exporters in value terms are Spain, Denmark, Netherlands, Germany and Ireland. Collectively they accounted for over 76% of the market share. The EU's largest trading partners were China, the United Kingdom and Japan, valued at €3.5 billion, €2.9 billion and €1.5 billion respectively.

Production

According to the CSO livestock slaughtering data, 2022 saw a decrease of 1.5%in pigmeat production compared to 2021, with the total pigs slaughtered for the year at just over 3.64 million head, down from 3.69 million in 2021.

Despite the decrease observed in 2022, over the past five-year period there has been growth of 5.5% in production, equalling an additional 188,770 pigs. About 3.5 million pigs were slaughtered at DAFM-approved plants, while about 0.09 million were slaughtered at Local Authority approved abattoirs.

Figure 3.18 *Pigs Slaughtered 2018 to 2022 (Non-Zero Axis)*

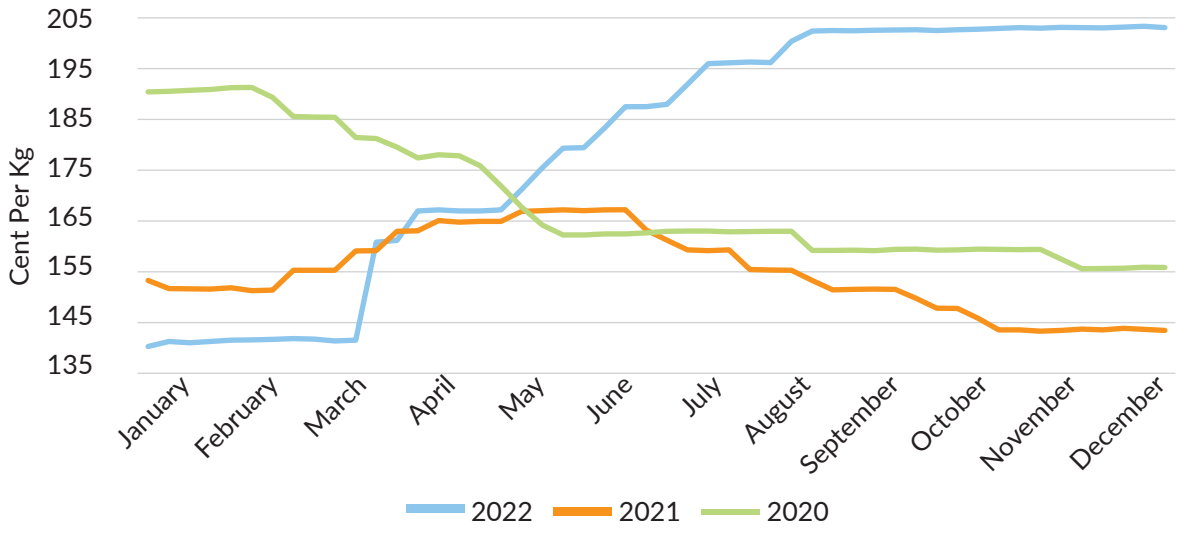


Source: *CSO*

Pigmeat Prices 2022

Price volatility remains a significant challenge for the pigmeat sector emphasising the cyclical nature of its prices. The advancement of African swine fever (ASF) into the German domestic pig herd in 2021 had a negative effect on pig prices, as bans on German exports to large markets such as China and Japan created a glut of oversupply within the single market. At the same time there was a resurgence seen in the Chinese national pig herd and a subsequent slump in imports from mid-2021, driving prices down. While Irish prices fell steadily from Q3 in 2021, Ireland had remained above the EU average through the year, and well above other export orientated nations such as Germany, Poland and the Netherlands.

Figure 3.19 *Irish Average Grade E Pig Price, 2020 – 2022 (Non-Zero Axis)*

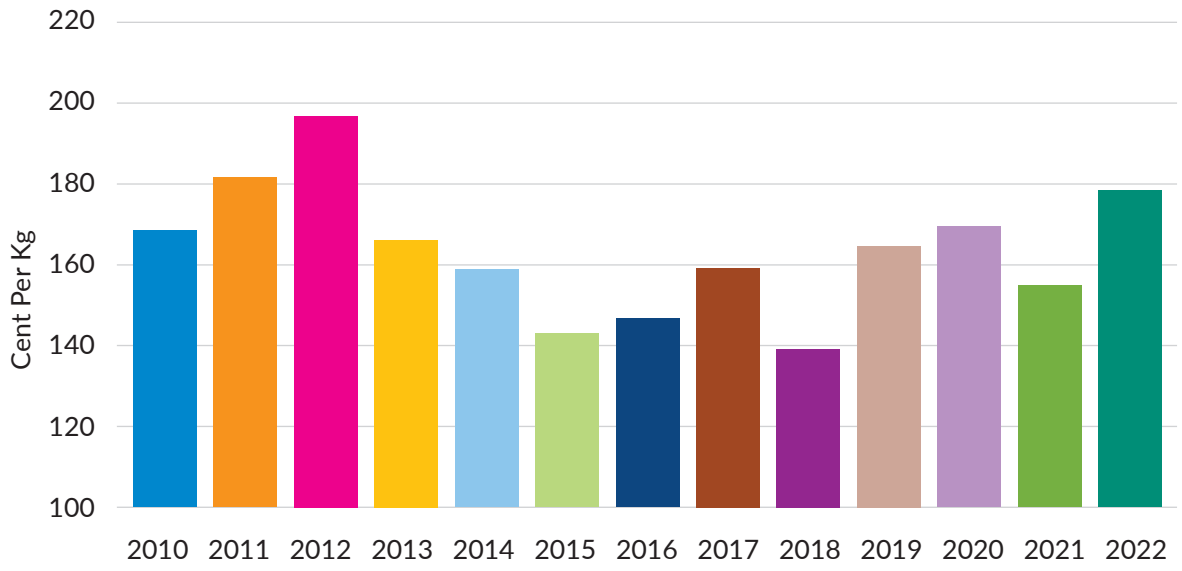


Source: *DAFM, Meat Market Report*

However, by late spring 2022 the average grade E pig price was €141.46/100kg, significantly lower than the EU average price for this period. From Q2 2022, there was a gradual increase in price, with a year-end price of €203.12/100kg. The average price for 2022 of €178.39/100kg was 15% higher than the 2021 average and 11% higher than the 5-year average price of €161.33/100kg.

The volatility of pig prices is demonstrated in the chart, showing the highest average price since 2010 was 197cent/kg in 2012, while the lowest was 139 cent/kg in 2018 (almost 30% lower).

Figure 3.20 *Average Grade E Pigmeat Prices, 2010 – 2022 (Cent per kg) (Non-Zero Axis)*



Source: *DAFM, Meat Market Report*

Sustainability

Sustainability and the reduction of environmental impact plays a key role in the development of the pig sector. Sustainability also encompasses economic and social factors. Food productions system now and into the future must be sustainable in terms of developing a supply of safe, authentic and healthy food with low environmental impact in terms of emissions and biodiversity. This will require a highly enhanced level of innovation, major improvements in efficiency and waste production, and access to new types of technology. With consumer awareness around sustainability an ever-increasing factor, any increases in production must be offset by interventions such as improvements in feed formulation and efficiency at farm level. In the current climate the focus will need to remain on the reduction of greenhouse gases and ammonia emissions. This can be assisted by investigating the use of lower protein diets, housing management and the potential of certain feed ingredients to reduce emissions.

The pig sector will also need to avail of circular economy opportunities. Pig slurry is a valuable fertiliser that offers an organic alternative to, and opportunity to make savings on, chemical fertiliser purchases. Effective nutrient management and planning is vital to allowing farmers maximise the amount of pig slurry that may be used on-farm, thereby reducing input costs.

The high-level objective of the Teagasc Pig Programme is to enhance the sustainability of Irish pigmeat production. The current research programme encompasses a broad range of topics relevant to this area such as nutrition, performance, management, health and welfare.

First launched in 2015, the Pig & Poultry Investment Scheme provides 40% grant funding aimed at improving energy efficiency at farm level. TAMS 3, released in early 2023, will see grant aid paid on approved, completed, and eligible expenditure up to a maximum investment ceiling of €500,000.

Highlights

- Irish pigmeat exports reached record levels of €956 million.
- Access gained to Malaysian market for pigmeat.
- Growth observed in key third country markets such as Japan, South Korea, Australia, and Philippines.

Challenges

- The illegal invasion of Ukraine continues to have very serious impacts on animal feed supplies and price. Ireland imported close to 12% by volume of its imported animal feed from Russia, Ukraine and Belarus combined in 2019 and 2020, but this has fallen to less than 6% in 2022. Russia and Ukraine are significant sources of global cereal exports, so the price and availability of cereals globally is impacted by the conflict. Availability and price of animal feedstuffs are a concern across all farming systems. The impact is being felt most sharply in the intensive pig and poultry sectors where feed costs represent a very significant portion of overall productions costs.
- Typically, feed costs represent about 37% of total direct costs on farms ranging from 11% on tillage farms to 45% on dairy farms, with cattle and sheep farms around 38%. For intensive pig and poultry farms, feed costs are the main costs of production at about 75% of the total cost.
- Pig production is completely dependent on the use of compound feed, because pigs as monogastric animals and cannot eat grass, and is thus significantly more exposed than other livestock sectors to fluctuations in feed prices.

Ireland Outlook

- Teagasc cashflow forecasts project that farm income losses experienced in 2022 are expected to continue, although at a moderately low level until Q2 2023. The sector is then forecast to return to profitability, with financial margins improving as the year progresses. Overall, the year is expected to deliver very moderate profitability.
- Throughput is also expected to decrease slightly in 2023, as an outcome of the reduction of the sow herd in 2022, partly due to farmers exiting the sector as well as the 10% breeding pig reduction conditionality of the Pig Exceptional Payment Scheme 2.
- The outlook for the Irish pig price is multifactorial, however, the two key drivers will be Chinese pigmeat demand and EU pigmeat supply.

EU Outlook

- According to the EU Short Term Outlook, African Swine Fever is forecasted to continue to have an impact on pigmeat production in the EU for 2023, combined with the pressure on margins for many farmers across the EU in 2022. EU pigmeat production is expected to decrease by 5% in 2023. Spain, the EU's largest pigmeat exporter, has suffered a disease outbreak which has resulted in a supply contraction of 9.2% in Jan-Apr 2023 compared to 2022.
- This, in conjunction with the sow herd decrease in the other main EU pig producers (Germany, Netherlands, France and Poland), will result in a lower supply of pigmeat on the EU market. This reduced supply will continue to support the pig price through 2023 and into 2024.
- Consumption of pigmeat in the EU has been in decline in recent years and this trend is expected to continue, with EU domestic consumption forecast to fall from 31.8kg to 30kgs per capita.
- EU pig prices are expected to remain at their current high plateau throughout 2023 due to tight EU pigmeat supply volumes.

3.6 Poultrymeat & Eggs

There were
107.7 million
birds slaughtered in Ireland in 2022, down 2.4% on 2021.

Poultry meat production in the EU was
12.8 million
tonnes in 2022.

Exports of poultry to United Kingdom increased by 35% in value in 2022 to
€246 million.

General Market Situation Poultrymeat

Ireland

The Poultry Sector plays an important role within the Irish agri-food sector, supporting up to 5,000 jobs, most of these in rural areas. As with other sectors, the Irish poultry sector faced many pressures in 2022 due to the increase in input costs, exacerbated by the impact of the illegal invasion of Ukraine by Russia.

Irish poultrymeat exports declined in volume during 2020 and 2021 by one third, from 143,100 tonnes to 95,500 tonnes. The closure of the hospitality industry for long periods during COVID-19 and Brexit have had significant impacts on the industry. However, 2022 saw a recovery in poultrymeat exports with volume of exports reaching over 100,000 tonnes and a 31% increase in value of exports to a record €314 million.

Poultrymeat exports depend significantly on the United Kingdom, with 58% of exports by volume and 78% by value. In 2022, the value of exports to the United Kingdom was €246 million, up by 35% on 2021, while for the next largest export destination, the Netherlands, the value of exports was just €20 million. Ireland's poultrymeat exports to the EU27 account for 17% of the value of exports, while most of the remainder went to countries in Africa such as Ghana, Benin and Sierra Leone.

South Africa, which had been the second largest market in recent years for poultrymeat, accounting for 12% of export value and 25% of export volume in 2020, suspended poultrymeat imports from Ireland following an outbreak of Avian Influenza in Ireland in late 2020.

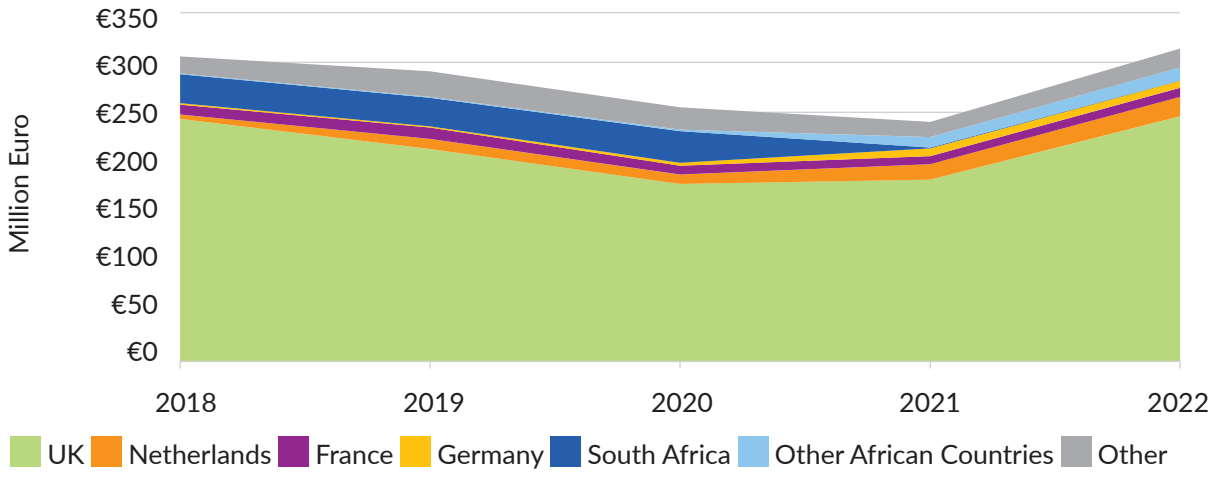
Table 3.10 *Top 5 Poultry Export Destinations 2022*

Rank	Country	€ Million	Tonnes
1	United Kingdom	€245.99	58,866
2	The Netherlands	€19.54	16,658
3	France	€9.09	4,901
4	Germany	€7.12	1,742
5	Spain	€6.08	2,825

Source: *CSO*

Exports to the Netherlands, which increased by 60% in value in 2021 and a further 25% in 2022, helped offset the loss of the South African market with exports of €20 million and 16,700 tonnes.

Figure 3.21 *Poultrymeat Exports by Destination and Value, 2018-2022*



Source: *CSO*

New markets

Ireland has access to 61 countries, including the EU Member States, for the export of poultry meat.

Ireland was successful in gaining access to the Namibian market in 2022. The Department continues to negotiate access to the Japanese, South Korean and Malaysian markets for poultry meat.

In 2022, the output value of the poultry sector was €204 million, up 9% on the previous year.

Table 3.11 *Output Value (€m) and Numbers (million heads) of Poultry 2021/2022*

	2021		2022	
	Value €m	Number '000	Value €m	Number '000
Poultry	187.49	140	204.20	142

Source: *CSO*

EU

The EU is one of the world's largest poultry meat producers and a net exporter of poultry products with annual production of around 12.8 million tonnes in 2022. The EU imports high value poultry products, including breast meat and poultry preparations, mainly from Brazil, Thailand and Ukraine, while the EU exports poultry products of lower value. Although poultry production is supported by the relative affordability of the meat, especially in times of high inflation, EU poultry throughput is down 2.2% in 2022 compared to 2021, with a total of 6.7 billion birds slaughtered across all Member States according to the European Commission poultry data. Outbreaks of High Pathogenic Avian Influenza (HPAI) has had devastating effects on some Member States over the course of the year, especially in Hungary which saw poultry numbers reduced by 12.7%, Italy by 11.9% and France by 8.7%.

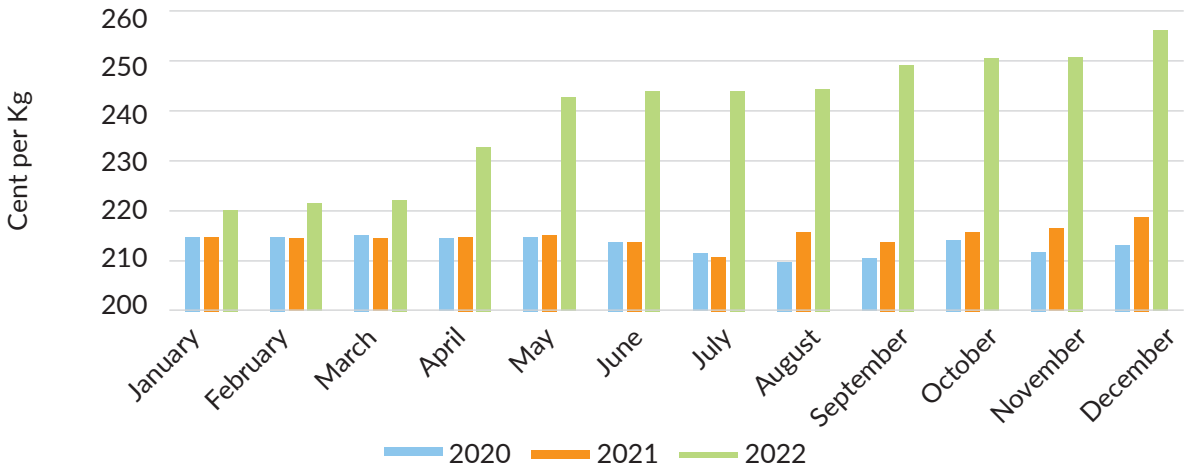
EU poultry and eggs exports in 2022 amounted to €5.9 billion, while EU imports reached €2.3 billion. Despite a 20% increase in exports due to a rise in unit values, the export volumes dropped by 204 thousand tonnes or around 8%. EU Imports grew by 10% in 2022, and further growth is expected in 2023 driven by a strong demand in the hotel, restaurant, and institutional (HRI) sector.

EU demand for Ukrainian chicken meat grew by 66% in 2022, as imports benefitted from temporary EU free-trade measures to support Ukraine. However, Brazil is still the largest exporter of poultry meat to the EU, accounting for just less than 20% of total EU imports.

Poultrymeat Prices 2022

Poultrymeat prices saw a marked rise over the course of 2022, up by 16% in December compared to the start of the year. The positive market returns observed over the medium term has been able to offset some of the rises in production costs. Over the past five years, the average yearly price paid for poultry meat has increased by 78%, with the average price for 2022 coming in at 240 cent/kg.

Figure 3.22 *Average Market Prices per kg for Broilers in Ireland 2020 to 2022 (Non-Zero Axis)*



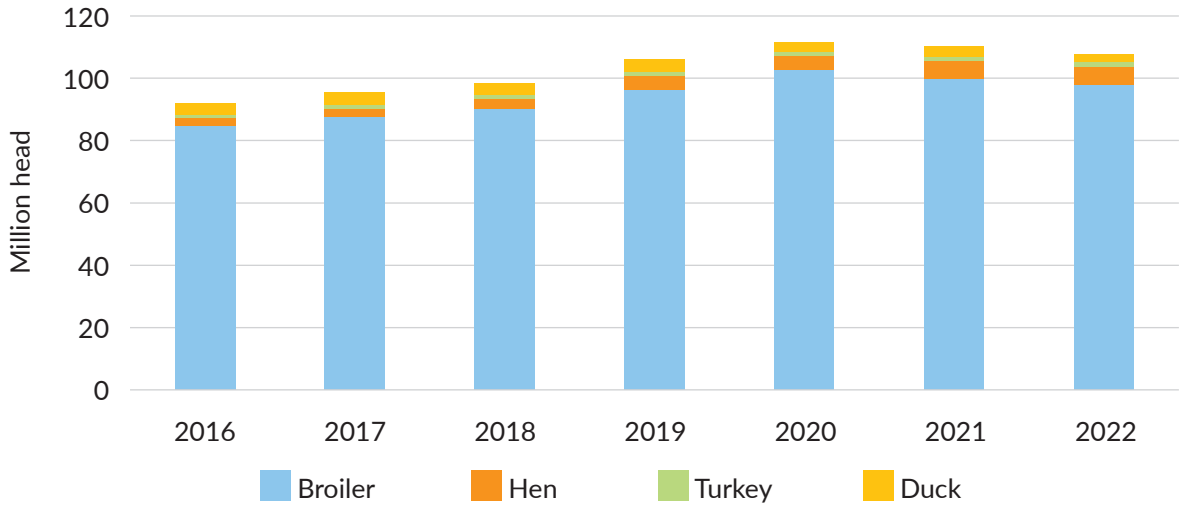
Source: *European Commission, Agriculture and Rural Development*

Production 2022

Poultrymeat

Irish poultrymeat production had been on an upward trend for a number of years until 2020, when a record total of 111.7 million birds were slaughtered in DAFM approved slaughter plants. This figure saw a slight decline in 2021 and again in 2022. Poultry throughput for 2022 came in at 107.7 million birds slaughtered, down 2.4% on 2021. Ninety one percent of the birds slaughtered were broilers, with 2.3% ducks and 1.4% turkeys.

Figure 3.23 *Poultry Slaughtering at DAFM Approved Slaughter Plants, 2016 – 2022 by Type*



Source: *DAFM*

General Market Situation Eggs

The table egg (or hen eggs for human consumption) sector in Ireland is relatively small in comparison to our EU counterparts, forming 1% (3.8 million) of the 376 million laying hens in the 27 EU Member States.

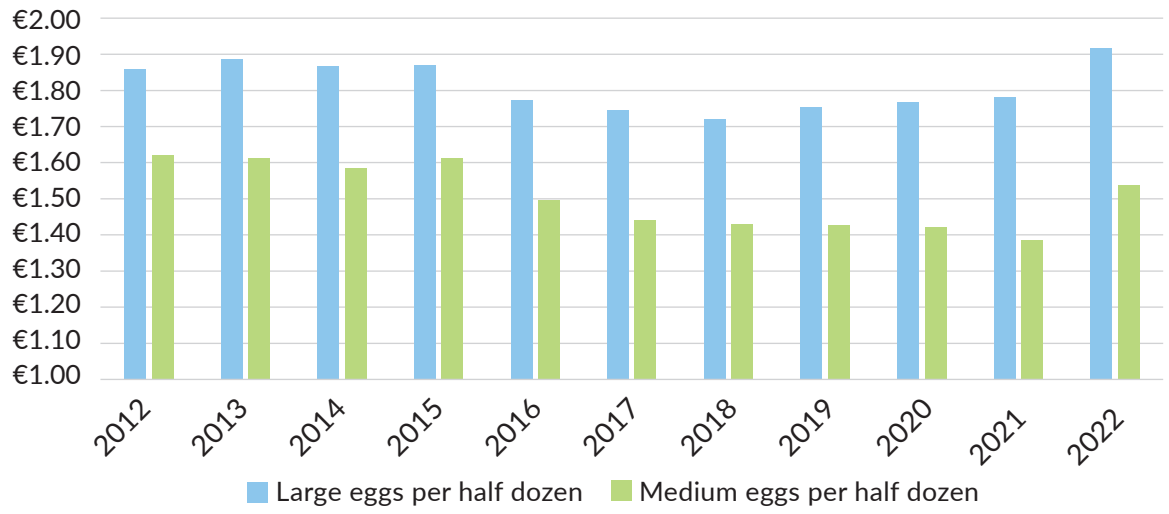
Most of the table eggs produced in Ireland are consumed in Ireland. In 2023 Ireland imported about €3 million worth of fresh eggs from the United Kingdom and a further €1.3 million from Poland. Ireland exported fresh eggs valued at €13 million to the United Kingdom in 2022.

Apart from the fresh eggs exported, Ireland also exported other egg products valued at €33 million in 2022, up from €11 million in 2020 and €29 million in 2021. The volume has increased from 3,100 tonnes in 2020, 4,100 in 2021 and 4,300 in 2022. These egg products include egg yolks, egg albumin and fertilised eggs for incubation.

Table Egg Prices

The consumer price for a half dozen eggs has remained relatively stable over the past 11 years. While prices for large eggs per half dozen fell from an average of €1.89 in 2013 to €1.72 in 2018, prices have increased since then to €1.92, an increase of 11.6%. The 2022 price is just 1.6% above the 2013 price.

Figure 3.24 *Consumer Prices for Half Dozen Eggs 2012 to 2022 (Non-Zero Axis)*



Source: CSO

Table Egg Production

Irish table egg production has been increasing over the last three years. However, outbreaks of diseases such as avian influenza (bird flu) have had a serious negative impact on some producers resulting in flocks being culled, leading to a significant loss in table egg production. In 2022, the volume of table eggs produced in Ireland was estimated at 65,000 tonnes (1.04 billion table eggs), a slight increase on the 64,000 tonnes produced in 2021 and a significant increase on the 58,000 tonnes produced in 2020, when various avian Influenza outbreaks had a significant negative impact on table egg production.

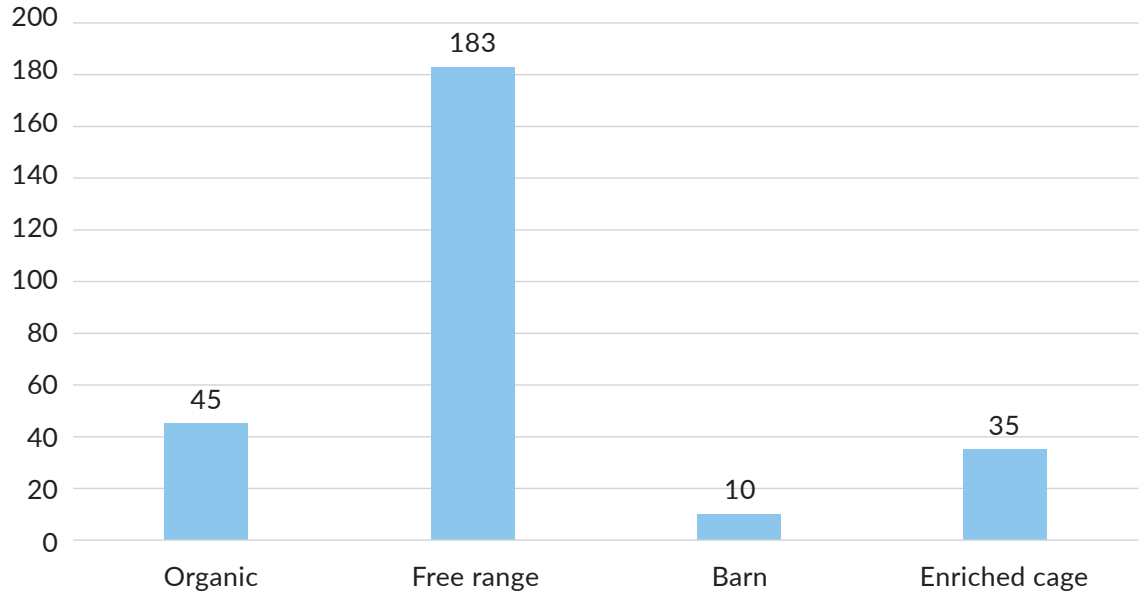
There was a total of 273 table egg production sites registered with DAFM in 2022, the same figure as for 2021. There was a relatively small number leaving the sector, which equalled those entering the sector. The total number of egg-laying birds in Ireland exceeded 3.8 million in 2022, a similar figure to 2021. However, it is worth noting that the number of barn egg places significantly increased from 1% to 5% of total bird places in 2022. In addition, for the first time ever, the proportion of free-range bird places exceeded the proportion of enriched cage bird places (46% vs 45% of total bird places respectively). The Irish table egg industry has commenced the change from enriched cage egg production to barn egg production. This is in response to retailer demand for table eggs from systems not involving enriched cage egg production.

Table 3.12 *Proportion of Laying Hens by Farming Method 2022*

	Total Laying Hens	Enriched Cage	Barn	Free Range	Organic
Ireland	3,880,150	45%	5%	46%	4%

Source: *DAFM*

Figure 3.25 *Number of Poultry Egg Producers by Farming Method in 2022*



Source: *DAFM*

Sustainability

First launched in 2015, the Pig & Poultry Investment Scheme provides 40% grant funding aimed at improving energy efficiency at farm level. There are a number of eligible investments that can be taken up by poultry farmers and producers, these include energy efficiency measures such as water meters, boilers and solar panels, as well as upgrades to poultry housing such as roof and wall insulation, LED lighting and disease reduction facilities for existing poultry houses. TAMS 3, announced in early 2023, has a 40% grant rate, with a €500,000 investment ceiling.

Highlights

- Poultry price saw record breaking levels in 2022, up 16% on 2021.
- Significant growth in exports to key markets for Irish poultrymeat such as the United Kingdom and the Netherlands.

Challenges

- Inflation, energy prices and the ongoing illegal invasion by Russia in Ukraine is driving up production costs for farmers across all sectors. The poultry sector is heavily dependent on feed and electricity and the CSO Agricultural Price Indices 2022 reported that feeding stuff for poultry has increased by 33.1% in 2022, while electricity prices increased 63% year on year.
- Irish poultrymeat production and exports have been significantly impacted by disease outbreaks in 2021 and 2022, which has subsequently restricted access to several third country markets. A predominant market Ireland has been unable to regain access to is South Africa. In 2020 South Africa was Ireland's second largest export destination behind the UK for poultry meat, accounting for €31.6 million in exports.
- The ongoing threat of Avian Influenza remains a risk to the poultrymeat and egg industry on the entire Island. Continued vigilance and collaboration between the industry and the government authorities is required to prevent entry and spread of the disease onto poultry holdings.
- The desire of the retail trade to source eggs from egg production systems other than the enriched cage type system is intensifying, with further pressure coming from animal welfare NGOs. This is a major concern for the industry as major investment will be required. The challenge for producers is being able to obtain contracts from the retail market that will allow them to invest and make an adequate return over the course of the investment. However, long term contracts from the retail sector are very difficult to obtain.

Ireland Outlook

- The global trade environment will remain pivotal in determining the outlook for the poultry industry in Ireland.
- Irish poultry production and export market was significantly affected by disease outbreaks in 2021 & 2022. The continued threat of disease and subsequent import restrictions is expected to affect international trade in 2023. In the medium term, developments in key market access negotiations for poultry meat to Japan and South Korea may lead to further opportunities for Irish poultry meat in the Asian market.
- Food Vision 2030 envisages Ireland becoming a world leader in Sustainable Food Systems over the next decade. Developing market opportunities at home and abroad is an important strategic goal and the creation of added value through insight, innovation and enhancement of consumer trust will be critical to its achievement.
- Irish hen table egg production is anticipated to continue to grow on the back of a strong consumer demand domestically for a good value source of protein and nutrition that is versatile to use. Enhancing access for table eggs to third country markets remains a key component of DAFM's market access goals.

EU Outlook

- The EU Agricultural Outlook for 2021-31 indicated that the current EU consumption growth of poultrymeat is expected to slow, from 2% growth per year in 2011-2021 to 0.6% in 2021-2031, resulting in an increase from 23.5 kg per capita in 2021 to 24.8kg in 2031. This will be driven by a healthier image of poultry compared to other meats, greater convenience in its preparation and the absence of religious constraints in its consumption. EU production is expected to continue to increase by 0.4% per year, reaching 14 million tonnes in 2031.
- In the longer term, demand is also expected to grow in key export destinations, such as wings to the Asian market and halves and quarters to the African market. Over the next decade, as production starts meeting the increased demand, EU prices are predicted to steadily rise.

3.7 Cereals

Production of cereals increased to **2.55 million** tonnes in 2022, which was an increase of 3.7% or 89,900 tonnes on 2021.

The cereals sector in Ireland utilises around **6% of total** agricultural area.

There were **10,255 hectares** of beans grown in Ireland in 2022.

General Market Situation 2022

Ireland

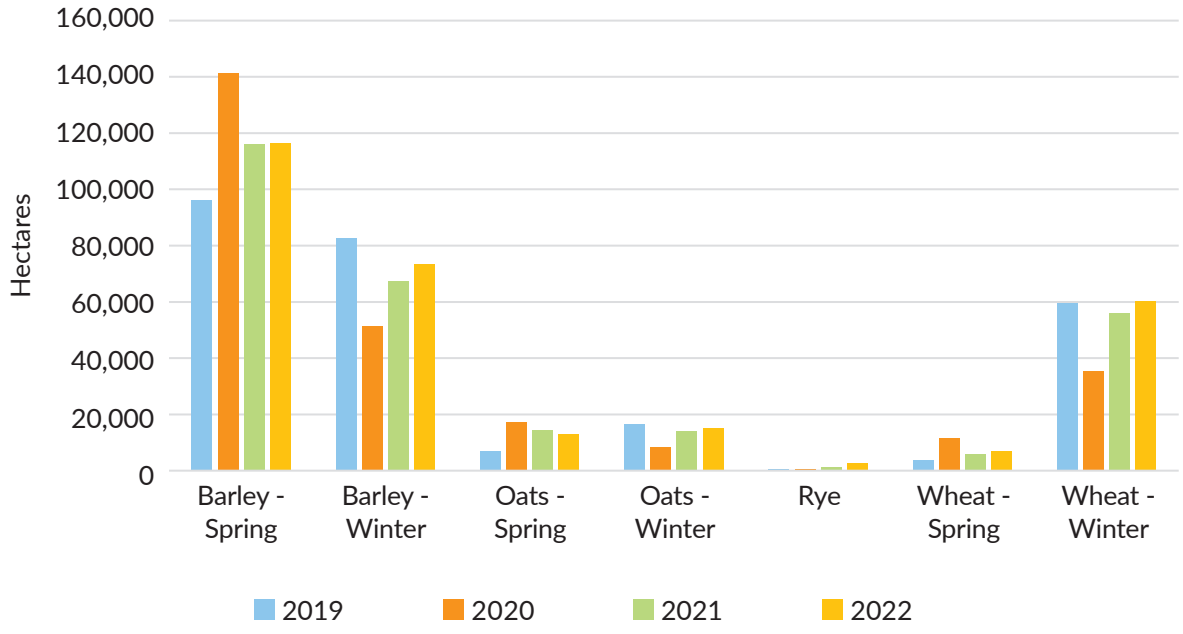
Following the illegal invasion of Ukraine by Russia in February 2022 there was significant volatility in the crops sector. There was significant uncertainty generated by the war and in particular, the ability of Ukraine, known as "the breadbasket of Europe", to continue with its significant exports of grain, including to the EU.

The volatility in the market resulted in output prices for grain and oilseeds reaching levels not previously seen. While input costs such as fertiliser increased significantly, tillage farmers were able to offset these costs against higher grain prices, which resulted in good gross margins for cereal and oilseed crops.

The cereals sector in Ireland is relatively small in comparison to our EU counterparts, accounting for only around 6% of agricultural area. Ireland's agricultural land base is overwhelmingly in grass/livestock production, and this is unique in European terms. Nonetheless, tillage is an important cog in the agri-food sector and is an important supplier of high-quality grain to the feed industry. Tillage growers also make a significant and growing contribution to the higher-value human food and drinks sectors, particularly malting and distilling but also the breakfast cereal market. The sector is also an important producer of seed to service its own needs and has a small export market with the potential for further expansion. It also supplies straw to the livestock sector for bedding primarily, but also for feed.

DAFM publishes the Basic Payment Scheme - Crop Areas each year, outlining the overall cereal (barley, oats, wheat and rye) area in Ireland. In 2022 there was 287,534 hectares compared with 275,080 hectares in 2021, an increase of 4.5%. This was an increase of 12,454 hectares and was aided by the introduction of the Tillage Incentive Scheme. Spring barley remains the main cereal crop at 116,209 hectares, followed by winter barley at 73,526 hectares and winter wheat at 60,199 hectares. When compared to the previous year, there was an increase in the area of winter crops for harvest in 2022 of about 11,600 hectares or 8.4%, which was as a result of good sowing conditions. Spring cereal area was similar to 2021. Wheat, oats and barley output in 2022 according to the CSO was 2.55 million tonnes, which was an increase of 89,900 tonnes on the previous year.

Figure 3.26 *Area of Wheat, Barley, Oats and Rye 2019 to 2022 in Hectares*

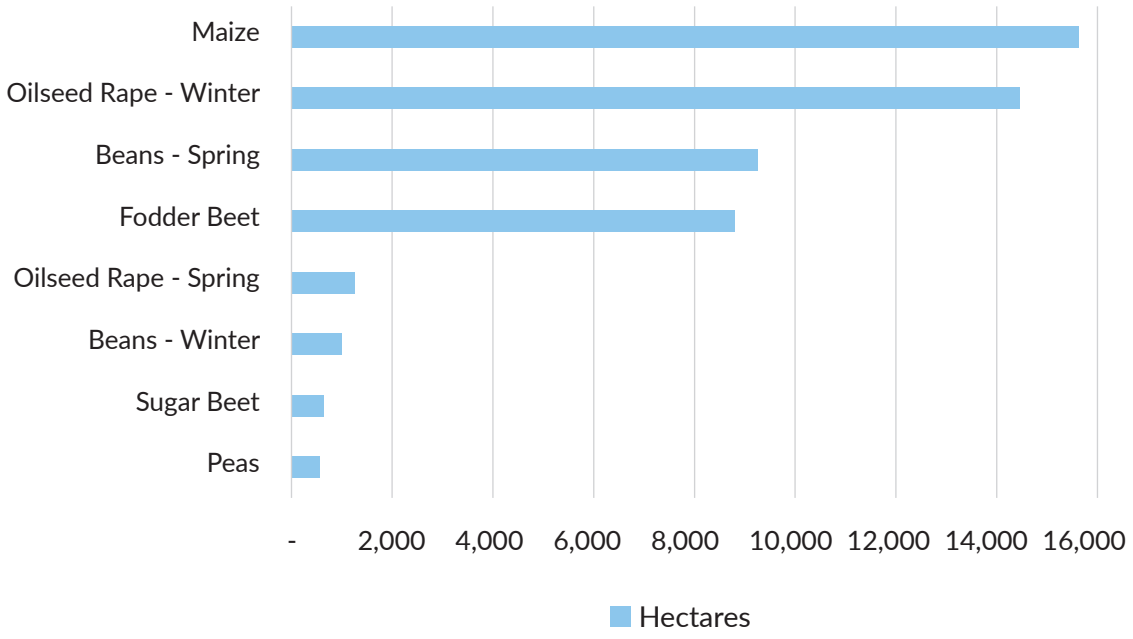


Source: *DAFM Basic Payment Scheme-Crop Areas*

Areas of non-cereal crops (maize, oilseed rape, beans, peas lupins, fodder beet and sugar beet) in 2022 increased by 7,075 hectares to 51,598 hectares. The increase was primarily due to 4,502 hectares increase in the area of oilseed rape. Maize and protein crops (beans, peas and lupins) increased by approximately 1,200 hectares each to 15,635 hectares and 10,812 hectares respectively. Beet area in 2022 was similar to the previous year at 9,431 hectares.

There was sufficient straw to meet demand despite continued good uptake of the Straw Incorporation Measure (SIM). Straw prices in 2022 ranged between €15-€18 per bale, which were slightly back on 2021 prices of €15-€20 per bale.

Figure 3.27 *Area of selected non-cereal crops 2022*



Source: *DAFM Basic Payment Scheme-Crop Areas*

The value of cereals increased in 2022 by 60%, while volume increased by 1% reflecting the strong prices available for cereals in 2022.

Table 3.13 *Output Value (€m) and Volume of Cereals ('000 tonnes) 2021/2022*

	2021		2022	
	Value €m	Volume	Value €m	Volume
Barley	282.88	1,360	484.20	1,379
Wheat	108.40	524	151.40	562
Oats	42.91	224	59.05	190
Total Cereals	**434.19**	**2,108**	**694.65**	**2,131**

Source: *CSO*

EU

The EU cereals area in the 2022/23 marketing year was forecast at 51.05 million hectares which is down 2% year on year. This decrease is mainly due to a reduction in the area of maize, rye and oats. Production of cereals in the marketing year 2022/23 was 267.67 million tonnes which is down 9.3% on the previous year.

Based on EU Member State returns from March 2023 (Fob Rouen), milling wheat was trading in the region of €269/tonne, feed barley at €266/tonne, maize at €276/tonne and durum wheat at €406/tonne. In the week before the Russian invasion of Ukraine, milling wheat was trading at €271/tonne, feed barley at €260/tonne, maize at €268/tonne and durum wheat at €278/tonne.

Table 3.14 *Estimates for the EU Main Crops 2021 and forecasts for 2022*

Crop	Area (million hectares) 2021e	Production (million tonnes) 2021e	Area (million hectares) 2022f	Production (million tonnes) 2022f	Area 2022 V 2021	Production 2022 V 2021
Soft wheat	21.82	130.02	21.9	126.74	0.4%	-2.5%
Durum wheat	2.21	8.06	2.19	7.14	-0.9%	-11.4%
Maize	9.25	73.48	8.86	52.27	-4.2%	-28.9%
Barley	10.27	51.89	10.32	51.93	0.5%	0.1%
Triticale	2.66	11.68	2.58	11.39	-3.0%	-2.5%
Oat	2.55	7.47	2.36	7.47	-7.5%	0.0%
Rye	1.92	7.95	1.74	7.41	-9.4%	-6.8%
Sorghum	0.15	0.82	0.13	0.56	-13.3%	-31.7%
Other cereals	1.26	3.84	0.97	2.76	-23.0%	-28.1%
Total	**52.09**	**295.21**	**51.05**	**267.67**	**-2.0%**	**-9.3%**

Source: *EU Commission – Cereal production*

In relation to cereals trade, data from EU Eurostat Comext indicates that the EU remains a net cereal exporter. Figures for 2022 show that imports of cereals were 36.2 million tonnes, while exports were 41.5 million tonnes with imports valued at €12.5 billion and exports valued at €15.08 billion.

Prices

Grain prices have displayed significant price volatility in recent years. In 2022, Irish feed barley traded at approximately €310/tonne inclusive of input trading bonuses, which was an increase of approximately €100/tonne since 2021. Malting barley prices also showed a significant increase with Boortmalt, the largest purchaser in the Irish market, paying €385/tonne, which was up from €238/tonne in 2021.

The gap between feed barley and malting barley in 2022 was approximately €75/tonne on average and has more than doubled since 2021.

Feed wheat traded at €320/tonne, which was up from €220/tonne in 2021 inclusive of input trading bonuses. Feed oats traded at €310/tonne, beans at approximately €255/tonne, while Oilseed Rape traded at €595/tonne with prices inclusive of input trading bonuses.

In general, 2022 was an excellent year for tillage farmers with high yields, good prices and favourable weather conditions at harvest.

Financial Assistance

A number of measures to support the tillage sector are currently available. These include:

- The Tillage Intervention Package was announced in March 2022. The package included the Tillage Incentive Scheme (TIS), which was introduced to support farmers to grow more tillage crops in 2022. A payment of €400/hectare was made on new ground that was not in crop production in 2022. To qualify, an increase in the total tillage crops grown on the holding in 2022 versus 2021 was required. Eligible crops included barley, wheat, oats, rye, oilseed rape, maize and beet. An additional allocation was made for the Protein Aid Scheme to guarantee a payment of €300 per hectare for beans, peas and lupins and €150 per hectare for newly introduced protein cereal mixed crops. The TIS is being continued in 2023 with a maintenance payment of €200/hectare available on ground entered into the Scheme in 2022 and maintained in tillage for 2023, while the €400/hectare payment remains for newly converted grassland crops.
- The Straw Incorporation Measure (SIM) was initially a pilot agri-environmental initiative that was introduced in 2021 and is now included as a measure in Ireland's CAP 2023-2027 with a budget of €10 million per annum. The purpose of the measure is to encourage tillage farmers to increase soil organic matter levels and consequently increase carbon sequestration levels in tillage soils. This is achieved by chopping and incorporating the straw from cereal crops and oilseed rape back into the soil, thereby improving organic matter and subsequently carbon sequestration, soil biology, soil workability and water retention capacity.
- The continuation and enhancement of Coupled Protein Aid for CAP 2023-2027 with an increased budget of €7 million per annum, up from €3 million in the last CAP. There have also been other changes such as the inclusion of a payment for a protein cereal mixed crop.
- The Tillage Capital Investment Scheme (TCIS) under TAMS III will continue in 2023 with tranches opening regularly throughout the programme. The ceiling investment will be reset to €90,000 per holding. New tillage investments eligible for support in TAMS III include handling equipment and pesticide reduction equipment such as interrow cultivators and weather stations.
- The Agri-Climate Rural Environment Scheme (ACRES) offers a broad range of actions for tillage farmers and the greatest number of any agri-environmental scheme thus far. New measures such as over winter stubble and unharvested cereal headlands, along with revised winter bird food and arable fallow measures, aim to provide a vital winter food source to diminishing bird populations during the most vulnerable time of the year. To enrich soils and

protect water quality, catch crops, minimum tillage and the introduction of a new riparian buffer arable measure, coupled with the continuation of the arable grass margin, will all greatly contribute to the enhancement of the environment.

- DAFM also supports the sector through its Crop Variety Evaluation Programmes and Seed Certification Schemes.

Production levels 2022

Wheat, oats and barley output in 2022 according to the CSO was 2.55 million tonnes which was an increase of 89,900 tonnes or 3.7% on the previous year. The overall area under cereals, beans, peas and oilseed rape in 2022 increased by 6% on the previous year or 18,000 hectares. The introduction of the Tillage Incentive Scheme (TIS) in early 2022 contributed to this increase in tillage area.

Overall yields were excellent with the exception of winter barley where barley yellow dwarf virus (BYDV) and 'take all', a fungus, impacted yields in southern and coastal counties. Weather conditions at harvest were excellent which saved on drying costs. The yield and quality of straw was very good. There was sufficient straw to meet demand despite the high uptake of the Straw Incorporation Measure.

Winter cereal sowings in Autumn 2022 for harvest 2023 are estimated to have reduced by 34,300 hectares due to unfavourable weather conditions. Winter oilseed rape sowing in Autumn 2022 is estimated at approximately 20,500 hectares due to significantly improved yields and the current strong market for oilseeds.

Sustainability – economic and environmental

The Teagasc National Farm Survey Preliminary results 2022 estimate that Family Farm Income (FFI) on tillage farms was €1,087 per hectare in 2022, which was a significant increase on the €839 per hectare achieved in 2021. Similar to the trend in recent years, FFI on tillage farms is second to dairy farms which stood at €2,332 per hectare. However, when expressed as an income per unpaid family labour unit basis, the gap between Tillage and dairying closed considerable with tillage at €95,106 versus dairying at €112,001.

2022 was the fourth straight year an increase in area of cereals was recorded since the low of 254,722 hectares recorded in 2018. The contribution of the sector to higher value markets is increasing and thus improving the viability of the sector. These outlets include the food and beverage sector with barley for brewing and distilling and food grade oats along with an important seed production sector.

From an environmental sustainability perspective, the tillage sector is a low emission farming system with 1.18 tonnes CO2 equivalents of agricultural GHG per hectare when compared to livestock farms at 3.3-8.7 tonnes per hectare. (Source: Teagasc Tillage Stakeholders Crops 2030 Report, NFS Sustainability Report 2019).

The Farm to Fork proposals as part of the Green Deal under the next CAP have set ambitious targets of a 20% reduction in the use of nitrogenous fertilisers, a 50% reduction in nutrient losses and a 50% reduction in the use and risk of plant protection products (PPPs) by 2030. There are also enhanced measures in the next CAP for improving soil, air and water quality and biodiversity, while reducing emissions contributing to climate change. While the carbon footprint of the tillage sector is the lowest of all agricultural sectors, there are still opportunities for the sector to further improve its sustainability credentials.

The sustainability of the sector is supported by various measures including post-harvest stubble cultivation requirements under the nitrates regulations, various measures under CAP including enhanced conditionality and eco-schemes, protein aid, straw incorporation measure and various measures under the agri-climate rural environment scheme (ACRES). DAFM also supports improvements in the sustainability of the sector through its crop variety evaluation programmes and seed certification schemes.

There are also an increasing number of industry-led sustainability initiatives such as the Diageo Regenerative Agriculture Scheme. This Scheme is specific to producers of malting barley and was launched in 2022. It has over 40 farmers participating with over 600 hectares of cover/catch crops. One of the key outputs of this scheme is to improve soils, biodiversity, carbon sequestration and with the aim to share the insights learned to develop a "scalable" model for sustainable malting barley production.

Highlights

- An increase of 4.5% in total tillage area in 2022, to which the introduction of Tillage Incentive Scheme contributed. Production of cereals increased to 2.55 million tonnes, which was an increase of 3.7% or 89,900 tonnes on 2021.
- A prolonged period of good weather in early autumn 2022 resulted in unbroken periods of harvesting of crops at low moistures which saved on drying costs.
- Significant price increases for grain/output in 2022 over 2021 in the range of €100/tonne. Despite higher input costs, these prices resulted in good margins for tillage growers.
- The Climate Action Plan 2023 highlighted the importance of the tillage sector in meeting emissions reduction targets. A target has been set to increase tillage area to 400,000 hectares by 2030, the current total area of tillage stood at 348,500 hectares in 2022.

Challenges

- There is concern on the potential loss of tillage area in 2023 due to competition for land from the dairy sector in order to comply with stricter nitrates regulations. The tillage sector is highly reliant on the land rental market with an estimated 30% of overall tillage land rented. Current high dairy profit margins mean that dairy farmers are able to outcompete their tillage counterparts for rented/leased land.
- The sector will experience higher input costs in 2023. Fertiliser is the single most expensive input in tillage systems and fertiliser costs remain high. A tillage farmer with winter crops in 2023 can expect a 62% increase in input costs from 2021. The equivalent figure for a farmer with spring crops is 48% (Source: Teagasc).

Ireland Outlook

- Current downward pressure on commodity prices coupled with higher input costs will result in lower profit margins for tillage growers in 2023. There is also increased pressure on maintaining the tillage area in 2023 due to competition for land from the dairy sector in order to comply with stricter nitrates regulations.
- Notwithstanding the current challenges, there are opportunities for tillage growers. There is significant potential for tillage farmers to increase native production to replace cereal and protein imports for the livestock industry. The increase in protein aid from €3 million to €7 million in the current CAP strategic plan will facilitate an increase in protein crops and help deliver on this potential.
- There are also many opportunities for the tillage sector in supplying the high-value food and drinks sector. There has been a sustained growth in demand for Irish malt for brewing and distilling. The recently completed works to increase capacity at Ireland's largest maltings in Athy are a welcome addition to the sector and are reflective of the increased demand for malt. This is driven by the success of Irish alcohol products. Irish beverage exports sales exceeded €2 billion for the first time in 2022, which is a 20% increase on sales since 2019.
- There is also an ongoing strong demand for oats, particularly for the higher value organic and gluten free markets. Irish tillage growers have responded to this demand by supplying high quality grains to meet industry needs.
- The higher value food and drink markets are very important in adding value along the supply chain, including for growers. The supply of high-quality grain for these expanding high-value markets will improve grower incomes into the future.

EU Outlook

- Given the current situation in Ukraine and other contributory factors, it is reasonable to expect that cereal supplies will be tight, and prices will remain volatile. While three of Ukraine's major Black Sea ports reopened to grain exports in 2022, the agreement under which they operated ceased in mid-2023. This has resulted in farmers being forced to route crops through bordering EU countries. The increases in imports from Ukraine has resulted in oversupply and depressed prices in neighbouring EU countries. The European Commission are working to alleviate pressures on local farmers.
- The cereals area forecast for the 2023/24 marketing year is 51.6 million hectares, up 0.6 million hectares or 1.1% from the previous year. Production for the 2023/24 year is forecast at 287.9 million tonnes, up 22.3 million tonnes or 8.4%. This will be mainly driven by an expected increased yield in soft wheat, barley, maize and rye production.

Table 3.15 *Forecasts for the EU Main Crops for the 2023/2024 Marketing Year*

Crop	2023/24 Area (million hectares)	2023/24 Production (million tonnes)	Production 2023/24
Soft Wheat	22.0	130.9	3.9%
Durum Wheat	2.1	7.5	-5.5%
Barley	10.8	54.2	5.2%
Rye	1.8	7.6	5.0%
Maize	8.5	65	24.9%
Oats	2.4	7.4	0.4%

Source: *EU Commission and International Grains Council*

- On the global front, latest forecasts for the 2022/23 season show that the total grains production estimate was reduced to 2,248.2 million tonnes down 42.3 million tonnes or 1.8%. The reduction in production is mainly due to maize harvests in Argentina and the United States of America being less than expected. Global consumption of grains is expected to decline to 2,266.5 million tonnes or down 1.2% year on year.
- The International Grains Council published its first complete outlook for the 2023/24 marketing year. Total world grain production is projected at 2,283.4 million tonnes, up 1.5% or 33.2 million tonnes year on year, with the increase mainly linked to a potential rebound for maize. Global consumption is expected to increase for all uses and reach 2,288.2 million tonnes, up 1.2% or 27.2 million. The total includes 759.9 million tonnes of food use (+1.0%), 1,028.4 million tonnes for feed use (+1.8%) and 369.2 million tonnes for industrial use (+0.9%). Ending stocks are estimated at 580.1 million tonnes or down 0.9% year on year.

3.8 Horticulture and Potatoes

In 2022,
99%
of mushroom exported from Ireland were to the United Kingdom.

The estimated value of horticulture output at farm-gate in 2022 was
€531 million.

In 2022 there were
260 hectares
of parsnips planted.

General Market Situation Ireland 2022

Rise in input costs

2022 was a particularly challenging year for the horticulture and potato sector. This was due to the significant rise in input costs which affected each sub-sector within horticulture. Factors driving rising costs are labour, packaging, energy, fertiliser, growing media, and transport. Labour is a key input in the horticulture sector and represents on average 40% of the total input costs for most sub-sectors. Prices for inputs remained volatile in 2022, but some energy costs began to decrease towards the end of 2022.

Energy costs as an input were at least 100% (dependent on the energy source), more expensive than in 2021. This rise in energy prices was a particular concern for horticulture enterprises growing crops indoors, for example in glasshouses and protected greenhouse structures. Although as in 2021 some price increases were negotiated in 2022 for produce, these increases were quickly eroded by input cost increases.

Due to rising input costs and increasingly small margins for profit some primary producers left the horticulture sector in 2022 and it is expected more will leave in 2023.

The protected crop sector was by far the sub-sector hit hardest by the increase in input costs, most notably growers who use gas to produce a crop which requires a warm environment to grow.

It was a good year for apple production and yields were high both for culinary and eating apples. Yield in the potato sector was lower than 2021 due to a dry summer and then difficult harvesting conditions due to high rainfall. Volumes produced for field vegetables decreased in 2022, as some operations scaled back to reduce inputs and thus costs. Mushroom production had a difficult year and this was in the main due to high input costs, but also due to a decrease in retail demand for the produce.

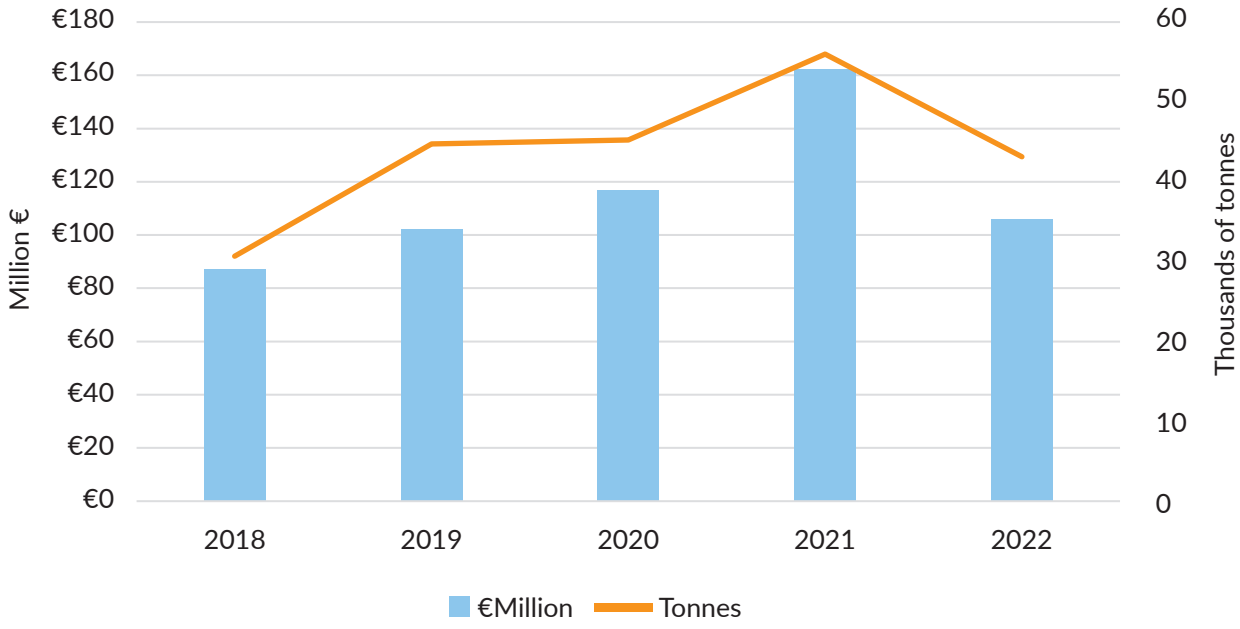
Amenity horticulture had a reasonable year. Market demand softened when compared with an exceptional 2021. This can be attributed to poor weather across a number of the bank holiday weekends, the pent-up demand for gardeners to travel as a result of the COVID restrictions in previous years, and a surplus of product on the market from an expansion of production capacity both domestically and on the continent. In general growers are coping relatively well with the rebalancing of the market and are looking at investing in their operations in the years ahead. There is concern over rising input costs and growers are particularly worried about recruiting and retaining personnel.

Production 2022

Mushrooms

2022 was a difficult year for mushroom growers due to a decrease in demand for mushrooms. The cost of production also increased causing further difficulty, including increases in the cost of labour, energy, packaging and growing media. Growers managed to negotiate price increases to help mitigate the rise in input costs. Both the value and volume of mushrooms exported dropped in 2022 for the first time in a number of years, with value down 35% and volume down 23% compared to 2021. Over 99% of mushroom exports are to the United Kingdom.

Figure 3.28 *Value and Volume of Mushrooms Exported 2018 - 2022*



Source: CSO

Protected Crop

Significant challenges were felt by this sector, mainly due to the ongoing increases in energy prices. Natural gas prices were particularly impacted with wholesale prices in the range of 300% higher than prices typically seen in January. Prices for natural gas continued to soar following the illegal Russian invasion of Ukraine, prices of up to and exceeding 500% more than expected were reported. As much of the crops for 2022 were already ordered, there was limited possibility of delaying planting to reduce energy usage. Some who could delay did this to sustain their businesses. Some negotiated price increases helped with the increasing energy costs but given the enormity of the increases in energy this was not sufficient to cover the difference. Overall, 2022 was a particularly challenging year for this sector.

Field Vegetables

Volume produced decreased in 2022 which was mainly due to a decrease in hectarage. The decrease was due to caution from growers as a result of labour shortages and input price increases. A price increase of between 5% and 20% was obtained depending on the crop type and this helped to lessen the effect of the increased input costs.

Soft Fruit and Top Fruit

In 2022, the situation with soft fruit was similar to 2021, with some soft fruit growers achieving price increases to help with the increase of input costs. The absence of late frosts in 2022 meant a return to normal yield after two poor years.

Nursery Stock

The nursery sector had a reasonable year in 2022. Demand for product in the market eased when compared with 2021, which had been exceptional as a result of COVID-19. Output in value was similar to 2021, but rising input costs have put pressure on profit margins. Growers cite sourcing and retaining labour as a constant challenge, and in some cases as a limiting factor in expanding operations.

Potato sector

Prices were similar to 2021. Hectarage under production decreased slightly and coupled with a dry summer and heavy rainfall during harvest, resulted in a decrease of overall volume compared to 2021. Rooster is still the main variety grown and it represents 56% of the overall production area. There was an increase in the production area for salad, white and chipping varieties in 2022.

Table 3.16 *Horticulture Output Estimates Value at Farm-gate, 2021 - 2022*

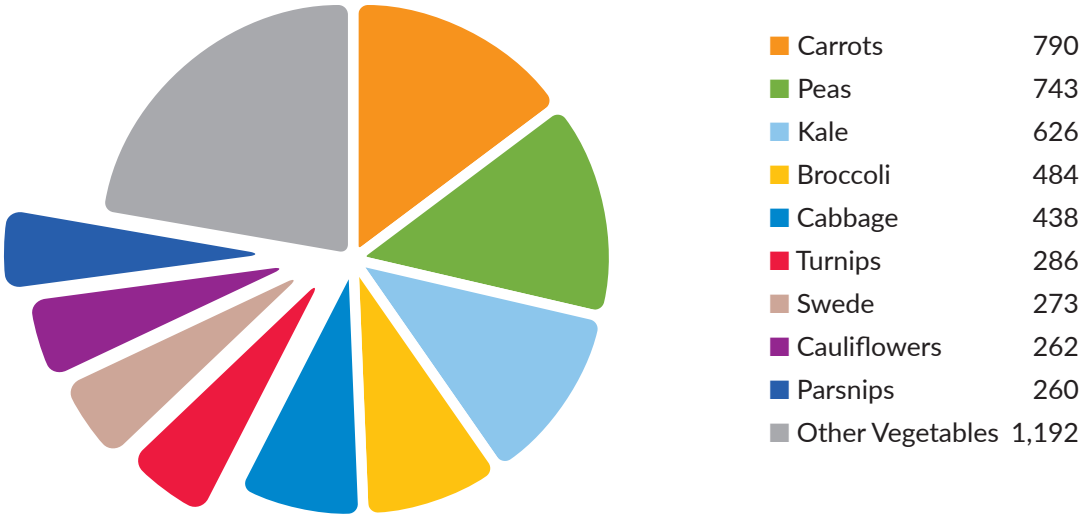
Summary	2021 € Million	2022 € Million	Change 2022-2021
Edible Protected crops	€80.04	€88.13	10.11%
Field crops	€84.37	€89.43	6.00%
Outdoor soft fruit	€0.76	€0.79	5.03%
Top fruit	€7.04	€9.49	34.84%
Amenity	€97.63	€99.70	2.11%
Potatoes	€116.92	€107.20	-8.32%
Mushrooms	€127.72	€129.89	1.70%
Sub- total	**€514.47**	**€524.62**	**1.97%**
Honey	€2.22	€2.22	0.00%
Sprouted seeds	€4.50	€4.50	0.00%
Grand total	**€521.19**	**€531.35**	**1.95%**

Source: *DAFM*

Prices 2022

2022 was a particularly difficult year for primary producers in horticulture, this was in the main due to the spiralling increases of input costs. Although, as in 2021, price increases of between 5% and 20% were negotiated across the sub-sectors of horticulture, these increases were primarily to compensate for input cost increases and did not lead to any increase in the profit margins of the producers.

Figure 3.29 *Area in Hectares of Selected Vegetables Planted in 2022*



Source: *DAFM Basic Payment Scheme - Crop Areas*

> *In response to some of the challenges being faced by primary producers of horticulture the Horticulture Exceptional Payment Scheme (HEPS) was introduced as a support measure that was provided in the form of a once-off payment to growers in those horticulture sub-sectors most affected by the illegal Russian invasion of Ukraine.*

Sustainability

Investments in climate action measures were significant again in 2022, accelerated by the rising input costs associated with energy. Conversion to more efficient lighting systems; increasing insulation on mushroom tunnels; commissioning of photovoltaic systems; and the purchase of equipment to facilitate precision agriculture (precision sprayers for example), were some of the projects undertaken at farm level. Producers have also conducted energy audits on site with a view to future-proofing operations by highlighting areas where targeted investments can reduce energy inputs.

The mushroom sector continued to invest in research and development of alternative growing media to identify solutions that are economically and environmentally sustainable.

The trialling of a carbon foot printing tool for use specifically across certain horticultural sub-sectors in Ireland began its scoping phase in 2022. This is with a view to trialling it in 2023 to obtain sustainability metrics for the primary production of horticulture in Ireland. The data produced from such a tool would allow growers and policy makers to understand where improvements can be made and boost its environmental sustainability credentials. This type of data is becoming increasingly important for all primary producers. Growers see this as an important selling point for produce, with some pursuing carbon neutral production systems as a unique selling point to customers.

Financial Assistance

In response to some of the challenges being faced by primary producers of horticulture the Horticulture Exceptional Payment Scheme (HEPS) was introduced as a support measure that was provided in the form of a once-off payment to growers in those horticulture sub-sectors most affected by the illegal Russian invasion of Ukraine.

HEPS was targeted at those horticulture subsectors identified at the time as at significant risk of losses that would jeopardise the viability of the businesses. The subsectors at most risk that were included under this Scheme included commercial growers in the glasshouse high-wire crops (peppers, tomatoes and cucumbers only), field vegetable, mushroom and apple sectors. It was designed to ensure the short-term security and thus the long-term viability of these sectors. The Scheme had a fund of €2.8 million to address the challenges that were threatening the viability and sustainability of certain subsectors.

In response to the shortage of seed potatoes the 2022-2023 Scheme of Investment Aid for the Seed Potato Sector was launched in 2022. The Scheme aims to help accelerate the development of capacity within the seed potato sector and aid improvements in the production, storage and marketing infrastructure of seed potatoes by providing grant assistance to producers towards the capital cost of specialized equipment and facilities.

The Scheme, which is worth €3 million over 2022 and 2023, and is funded utilising funding under Ireland's allocation from the Brexit Adjustment Reserve Fund (BAR).

Highlights

- Very strong investment in solar PV through the EU Producer Organisation scheme (administered by DAFM), as growers try to make their operations more sustainable and insulate themselves from the volatility in energy markets.
- The amenity sector had a reasonable year although demand was down on 2021.
- In 2022, funding of €4.2 million was provided to Irish fruit and vegetable growers through the EU Fruit and Vegetable Producer Organisation Scheme administered by DAFM. The Scheme of investment aid for the development of the commercial horticulture sector provides grants at a rate of 40% for capital investments and €6.8 million was paid to horticulture producers in 2022.
- Following the commissioning by DAFM of KPMG to carry out a report on the horticulture sector in 2021, Opportunities for the Irish Horticulture Sector was published in July 2022. This report identified more than eighty cross-cutting factors and sector-specific actions that could encourage growth of the sector. Public and sector consultation took place on this report from July until December 2022. The results from this consultation, together with the overall ambition and vision agreed with the Horticulture Industry Forum steering committee, has informed a framework for a National Horticulture Strategy that will be published in 2023.

Challenges

- Input costs have significantly increased for labour, energy, fertiliser, packaging, casing/growing media and plant protection products. Based on information collated by Teagasc, input cost increases in 2022, as in 2021, has in many cases exceeded grower margins. Growers will be unable to absorb further increased costs without further increases in what they are paid for their produce. Growers may be forced to leave the market, with a number already choosing to reduce their operations to limit their exposure.
- The sourcing of labour and retention is a perennial challenge for growers, with the potential to become even more of an issue as the labour market tightens.
- Shortage of seed potatoes due to a change in phytosanitary requirements as a result of Brexit.

Ireland Outlook

- The immediate concern for Irish horticulture producers is the effects of increased commodity prices in 2022, particularly inputs such as fuel, energy, and fertilisers. This has increased the uncertainty for horticulture producers in assessing the profitability of produce they plan to sow, making forward planning difficult.

3.9 Intermediate Consumption

The total spend on fertilisers in 2022 was **€1.2 billion**, which was double the spend in 2021 of €606 million.

Ireland imports close to **six million tonnes** of animal feed each year.

Rolled barley cost **€420/tonne** in July 2022 compared to €310/tonne in January 2022, up 35%.

General Situation Ireland 2022

Intermediate consumption expenditure in agriculture rose significantly in 2022 due to large increases in cost of fertilisers, feed and energy & lubricants. These three categories of spend accounted for 43% of total intermediate consumption in 2020 but given the significant increases in costs, they accounted for 53% of total intermediate consumption in 2022. The cost of fertilisers used on Irish farms doubled from €605 million in 2021 to €1,208 million in 2022 and this was despite a reduction in the use of fertiliser by 16.5%. As discussed in chapter 2, while the cost of feed, fertiliser and energy has come down slightly in 2023, they are still considerably above the costs in early 2021.

Intermediate consumption is the value of all goods and services used as inputs in the production process. It excludes the cost of acquiring new or existing fixed assets, e.g. tractors, agricultural machinery etc. They are recorded as gross fixed capital formation (GFCF). Intermediate consumption includes expenditure on contract work and forage plants, even if consumed within the same agricultural holding. Detailed data on intermediate consumption is included in the CSO release Output, Input and Income in Agriculture.

Table 3.17 *Expenditure on Intermediate Consumption in Agriculture, 2020 - 2022*

Category of Spend	2020 € Million	2021 € Million	2022 € Million	2022 Vs 2021	
				€ Million	Percentage
Feeding stuffs	€1,525.2	€1,798.4	€2,333.3	€534.9	29.7%
Fertilisers	€532.3	€605.5	€1,208.0	€602.5	99.5%
Energy and lubricants	€377.0	€461.2	€634.1	€172.9	37.5%
Forage plants	€1,134.4	€1,108.9	€1,301.1	€192.2	17.3%
Contract work	€430.8	€464.4	€573.5	€109.1	23.5%
Other expenses	€1,625.7	€1,704.8	€1,868.7	€163.9	9.6%
Total Intermediate Consumption	**€5,625.4**	**€6,143.2**	**€7,918.7**	**€1,775.4**	**28.9%**

Source: CSO

Animal Feed

The industrial compound feed production in Ireland for 2022 was 5.7 million tonnes, which is 3.6% higher than in 2021. There was an 8.6% increase in feed imports compared to 2021 levels.

The ongoing conflict in Ukraine continues to impact on animal feed prices. There have been significant knock-on inflationary effects on farm inputs, which has resulted in higher food prices for Irish consumers. In 2022 the cost of feeding stuffs used on farms increased from €1.8 billion in 2021 to €2.3 billion in 2022 an increase of €534 million or 30%.

Table 3.18 *Compound Feedingstuffs Production 2017-2022 (Tonnes)*

Year	2017	2018	2019	2020	2021	2022	% of Total
Cattle	2,919,301	3,807,225	3,115,864	3,120,186	3,350,269	3,514,972	62%
Pigs	692,677	712,581	705,701	768,675	781,889	723,897	13%
Poultry	640,562	632,965	630,838	651,753	669,046	696,856	12%
Sheep	202,719	247,882	187,160	202,093	236,950	222,858	4%
Other	444,103	484,775	459,831	471,218	483,557	509,377	9%
Total	**4,899,362**	**5,885,428**	**5,099,394**	**5,213,925**	**5,521,711**	**5,667,960**	

Source: *DAFM*

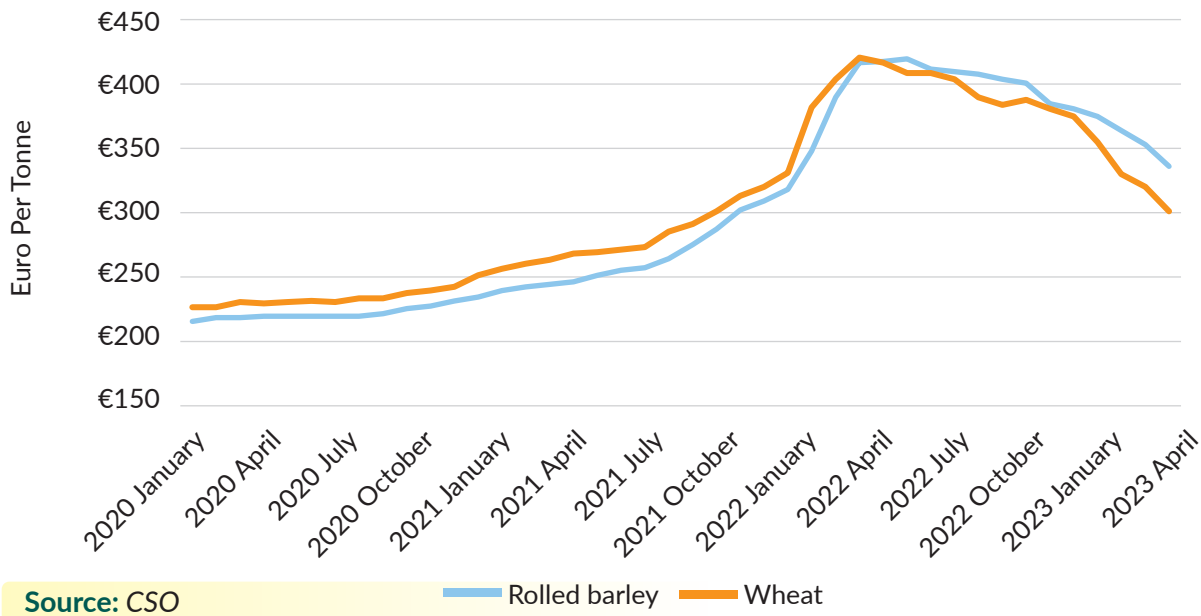
Ireland imports close to six million tonnes of animal feed each year with around one million tonnes originating in the United Kingdom. Just less than one million tonnes come from both United States and Argentina. Other major sources of animal feed are Canada (630,000 tonnes), Brazil (508,000 tonnes) and France (355,000 tonnes), with around 170,000 tonnes coming from each of Ukraine, the Netherlands and Russia.

Ireland also exports about one million tonnes of animal feed, with over three quarters of it going to the United Kingdom, but it also goes to more than 30 countries worldwide. Around 40,000 tonnes of animal feed are exported to both Vietnam and the Netherlands, with 24,000 tonnes to Germany and 17,000 tonnes to the Philippines, our top five export destinations.

Animal Feed Prices

Feed prices have risen consistently since the beginning of 2020 until the last quarter of 2022 when prices plateaued. According to CSO data on feed stuff prices, in early 2020 rolled barley was around €215/tonne, rising slowly to around €230/tonne at end of 2020, an increase of 9%. However, prices started rising more rapidly in 2021 and by January 2022, rolled barley had increased in price by 32% to €309/tonne. During early 2022 prices rose quickly and stood at €420/tonne in July 2022, up 35% on the January price. However, the second half of 2022 saw better news for those purchasing rolled barley, with prices falling back to €401/tonne by end of 2022. They have continued that fall for the first six months of 2023, reaching €336/tonne in June 2023. Despite the fall in prices, rolled barley is 44% more expensive in June 2023 compared to January 2021.

Figure 3.30 *Price Per Tonne of Rolled Barley and Wheat 2020 – June 2023. (Non-Zero Axis)*



Source: *CSO*

Fertiliser

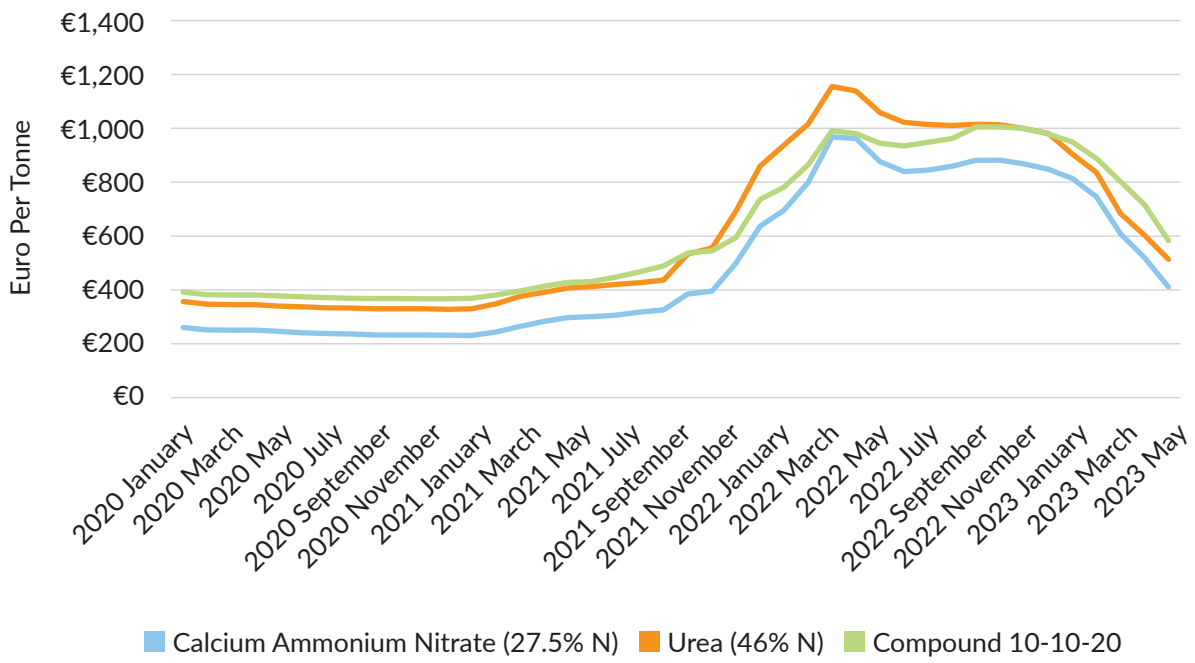
There has been an upward trend in fertiliser prices since the start of 2021. While there are a number of factors contributing to these price increases, the major driving factors are increased global demand, rising production costs (particularly the cost of natural gas), and issues with supply for certain fertiliser products.

The illegal invasion of Ukraine by Russia in February 2022 caused a significant shock to the European fertiliser market which had an additional impact on fertiliser prices. However, the Irish fertiliser industry has taken great strides in securing alternative fertiliser supplies. As such, the availability of fertiliser is not a significant issue in 2023. The total spend on fertilisers in 2022 was €1.2 billion, which was double the spend in 2021 of €606 million.

Fertiliser Prices

While feed prices rose slightly in 2020, fertiliser prices actually dropped slightly, by 6% to 12%, during the course of 2020. However, from Spring 2021 fertiliser prices rose quickly with Calcium Ammonium Nitrate (27.5% N) increasing by 178% over the course of 2021. The price rises continued in early 2022 with 27.5%N reaching a maximum price of €970/tonne in April 2022, more than four times the price in January 2021 of €229/tonne. Since April 2022 prices have mostly been on a downward trend but at a much slower rate of change then when the price was rising. In June 2023, 27.5%N costs €410/tonne, less than half the price one year earlier but 80% more expensive than in January 2021. Details of the volume of fertiliser and lime used in 2022 can be found in chapter eight.

Figure 3.31 *Selected Fertiliser Prices 2020 – June 2023.*



Source: *CSO*

Agricultural Input Price Indices

There has been an upward trend in the CSO's agriculture input price index since the start of 2021 and the trend continued in the first half of 2022 before the upward trend reversed, but at a much slower rate. While there are a number of factors contributing to these price increases, the major driving factors are significant increase in price of natural gas, the invasion of Ukraine by Russia and increased global demand. In 2022, Ireland imported a little over 15% of its chemical fertiliser from Russia, mostly mineral or chemical fertilisers, containing two or three of the fertilising elements nitrogen, phosphorus and potassium, down from over 20% in 2021. It should be noted that the price of fertiliser varies considerably over the years and according to the CSO index it was almost 19% cheaper in 2020 than it was in 2015. All other agriculture inputs had increased since 2015 by between 2.2% and 9% apart from energy.

Table 3.19 *Agricultural Input Price Indices (Base 2015=100), 2020 – 2022*

Agricultural Input Price Indices	2020	2021	2022	2022 Vs 2021	2022 V's 2020
Fertilisers	81.3	101.8	226.9	122.9%	179.0%
Energy	98.1	112.9	160.6	42.3%	63.8%
Feeding stuffs	108.3	119.5	154.7	29.5%	42.8%
Plant protection products	104.1	104.9	126.0	20.1%	21.1%
Other goods and services	105.7	108.5	115.2	6.1%	8.9%
Lubricants	104.9	109.2	113.7	4.2%	8.4%
Maintenance of materials and buildings	105.1	107.3	111.5	3.9%	6.1%
Veterinary expenses	109.0	110.3	113.4	2.8%	4.0%
Agricultural input price index	102.2	111.9	151.3	35.1%	48.0%

Source: *CSO*

While the average increase in the agriculture input price index is 35.1% during 2022 a number of inputs have increased by considerably less such as veterinary expense which have increased by less than 3%.

When analysing the price indices, it is important to consider the change in the index not just over one year but over a longer period. For example, when comparing the 2022 input index with two years earlier in 2020 the index has increased by 48% driven by the massive increase in fertilisers of 179%, energy up 64% and feeding stuffs up 43%. While agriculture input prices had remained relatively stable for many years, similar to consumer prices, with single digit percentage changes each year this has changed since mid to late 2021 when prices began to rise at a much faster pace. Further information on the significant changes in the price index can be found in chapter two, section 2.3.

Sustainability

National Fertiliser Database

The National Fertiliser Database has been established to provide accurate tracking of fertiliser. This data will be used to accurately track any reduction in fertiliser over time.

Crude Protein Survey 2022

There was an excellent response to the crude protein survey that was completed in 2022; the response represented 99.7% of overall national feed production. This high response rate gives an accurate picture of current protein levels in livestock rations.

Overall, average crude protein content of dairy, beef, pig and poultry feed for 2021 was 15.9%, 14.9%, 16% and 18.2% respectively. Overall protein levels have been following a positive environmental downward trend since 2015. The biggest reduction has been in pig feed with an overall reduction of 1.3% over this period. While a reduction in the percentage of crude protein was recorded for all feed categories since 2015, except poultry feed, there has been an increase in crude protein over the time period examined due to an increase in volume of animal feed produced.

Reducing crude protein content in livestock rations can reduce both N excreted and the proportion of N in urine and is an important mitigation measure in reducing ammonia and N2O emissions. It is one of the measures outlined in the government Climate Action Plan and also DAFM's Ag-Climatise roadmap.

Accurate data and its application are of critical importance in the development of emissions reduction strategies. This survey will provide the data necessary to underpin strategy development and policy in this area. The survey will be repeated in 2024.

Highlights

- The quantity of protected urea sold in 2022 was 69,593 tonnes, an increase of more than 50% on 2021.
- Ground limestone usage, which was up 50% in 2021 compared to 2020, increased by a further 4% in 2022 to 1,386,915 tonnes.

Ireland Outlook

- The Teagasc Situation and Outlook issued in July 2023 indicated for the rest of 2023, global cereal market developments, as reflected in the 'on account' harvest prices reported at harvest 2023, indicate a significant decrease in Irish cereal prices relative to 2022. A 20% decrease in farm-gate cereal prices for the 2023 harvest is forecast. Averaging across the full year however, it is likely that Irish farm gate feed prices in 2023 will be approximately 10% higher than in 2022.
- Fertiliser use on tillage farms is likely to remain closer to normal, given that reductions in use can easily impact on yields. However, accurate data on this will not be available until late 2023. Combining a reduction in use, with a 10% fall in prices over the first half of 2023, the expenditure on fertiliser in Ireland will decline in 2023.
- Overall, Irish agriculture will see a decline in expenditure on fuel in 2023 compared to 2022, but expenditure on electricity in 2023 is likely to be higher than in 2022.

EU Outlook

- Uncertainties resulting from the Russian invasion of Ukraine, inflation and disease issues will result in market conditions for animal feed remaining difficult. Increased focus on sustainably-sourced feed ingredients will inevitably result in price increases.
- The outlook for fertiliser prices will normalise as the global market adjusts to the issues of 2022. The price is already decreasing. The primary reason for the reduction in fertiliser prices is due to increased availability of natural gas in Europe amid a moderate winter in 2022 and abundant LNG imports, which enabled manufacturers to restart production with significantly cheaper inputs.

CHAPTER 4

Forestry

The national forest estate is a sink for approximately **323 million tonnes** of carbon.

In 2022, **€70 million** was spent by DAFM on forest activities including afforestation, maintenance grants, annual premium payments, and grants for forest road infrastructure.

Felling licences issued for clearfell in the private sector increased significantly from 8,278 hectares in 2021 to **14,006 hectares** in 2022.

4.1 Overview

In Ireland, the area under forestry is estimated to be 808,848 hectares or 11.6% of the total land area, according to data collected for the fourth National Forest Inventory (NFI), which was completed in 2022. This compares to an EU-27 average of 38%. Forest cover is estimated to be at its highest level in over 350 years. Of the total forest area, 50.9% is in private ownership, with public forests occupying the remaining 49.1%. The forest estate is comprised of 69% conifers and 31% broadleaves.

The age-profile of our forests is increasing with 40% of stocked forests being less than 20 years of age and 30% between the ages of 21 and 30 years. Since the previous NFI was carried out in 2017, 39,640 ha of forests were thinned for the first time, which is a positive for wood mobilisation.

Forests play an important role in mitigating climate change by sequestering and storing atmospheric carbon dioxide. The results of the NFI indicate that the national forest estate is an important sink for carbon, at 323 million tonnes of carbon. Irish forests are also a rich resource of biodiversity providing important and abundant habitats for many species.

The principal objective of DAFM in relation to forestry between now and 2030 is to radically expand the national forest estate on both public and private land in a manner that will deliver lasting benefits for climate change, biodiversity, wood production and rural economies.

4.2 General Forestry Situation

In 2020 it was estimated that 35% of the land area in the 27 EU countries, including United Kingdom, was covered by forests compared to 11% in Ireland. Despite Ireland lagging behind its EU partners, significant progress has been made over the past half century. Between 1950 and 2022, an average of 8,957 hectares of forestry was planted each year. In recent years however, the level of planting has been declining and in 2022, 2,273 hectares of new forests were created, well below the current target of 8,000 hectares per year under the Climate Action Plan.

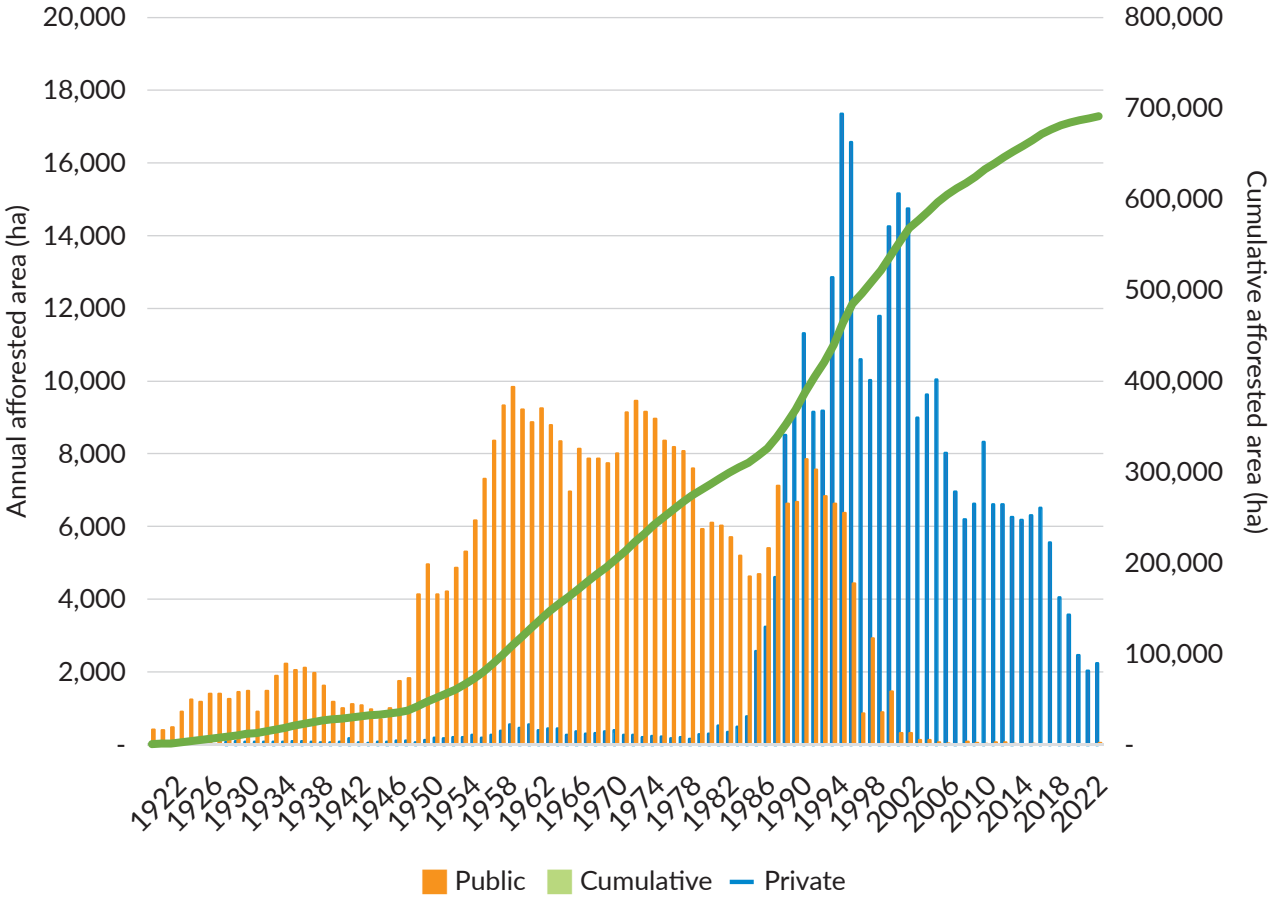
Table 4.1 *Afforestation in Ireland 1918 to 2022*

Year	Area (ha)	% of Total Land Area
1918	100,717	1.4
1928	89,000	1.2
1942	89,403	1.3
1950	98,073	1.4
1965	254,350	3.7
1973	323,654	4.6
1985	411,529	5.9
2006	697,730	10.1
2012	731,650	10.5
2017	770,020	11.0
2022	808,848	11.6

Source: *DAFM Annual Forest Statistics*

Long-term afforestation trends, such as the change from state-led to private-led afforestation in the 1980s and 1990s, and the level of annual afforestation, are shown in Figure 4.1. Private afforestation came to the fore in the mid-1980s following the introduction of grants and, particularly, an annual premium scheme for afforestation. Farmers have accounted for 81% of private lands afforested between 1980 and 2022.

Figure 4.1 *Annual state and private afforestation 1922-2022*



Source: *DAFM Forest Statistics*

Key Statistics from Forest Statistics Ireland 2023

1. In 2022, €70 million was spent by DAFM on forest activities including afforestation, maintenance grants, annual premium payments and grants for forest road infrastructure. This is an increase of €4.5 million on expenditure in 2021.
2. During 2022, 2,273 hectares of new forests were created. Cork had the highest afforestation area at 400 hectares, followed by Clare at 211 hectares.
3. The proportion of broadleaves in new forests created during 2022 was 42%, which was up from 41% in the previous year.
4. Farmers have accounted for 81% of private lands afforested between 1980 and 2022. Since 1980, nearly 24,000 private landowners have received grant aid to establish forests. The average size of private grant-aided afforestation since 1980 is 8.64 hectares.
5. In 2022, 62% of the area afforested was by people aged 60 years or more. 59% of the total area that received premium payments was owned by people aged 60 years or more.
6. In 2022 the volume of roundwood removals was at 4.14 million cubic metres, a decrease of 192,000 cubic metres on the previous year.

7. The construction of 70 kilometres of private forest roads was funded during 2022. This reflects the projected increase in timber and wood to be harvested, which is expected to double by 2030.
8. Felling licences were issued during 2022 for the thinning of 25,044 hectares and the clearfelling of 23,009 hectares. Felling licences issued for clearfell in the private sector increased significantly, from 8,278 hectares in 2021 to 14,006 hectares in 2022.
9. Approximately half of Ireland's forest estate is certified by international non-governmental organisations to promote good forest practice. The vast majority of this area is in the public forest estate, with 15,680 hectares of private forest currently certified.
10. Forests and forest products play an important role in mitigating climate change by sequestering and storing atmospheric carbon dioxide. The national forest estate is a sink for approximately 323 million tonnes of carbon.
11. The number of people employed directly in the forestry and logging sector averaged 2,800 between 1998 and 2017.
12. In 2020 total employment generated by activities in the forest and wood products sector was estimated to be 9,500 full time equivalents.

National Forest Inventory

The purpose of the NFI is to record and assess the extent and nature of Ireland's forests, both public and private, in a timely, accurate and reproducible manner. Reliable, current and consistent information is required to inform domestic forest policy, to support forest research and fulfil national and international reporting commitments. The fourth NFI will facilitate the on-going monitoring of the national forest estate, including the assessment of change over time. In particular, the evaluation of volume increment and harvesting volume will facilitate the monitoring of Sustainable Forest Management (SFM).

The fourth National Forest Inventory (NFI) cycle commenced in 2020. Fieldwork and data analysis were completed during 2022. The national forest estate is still expanding and has now reached 11.6% of the total land area, with a wide variety of forest types present. The total forest area has increased from 697,842 hectares (ha) in 2006 to 808,848 ha in 2022. The increase in area is a result of afforestation and natural development of semi-natural forests. Between 2006 and 2022 semi-natural forests are responsible for one-third (33.1%) of the new forest areas captured.

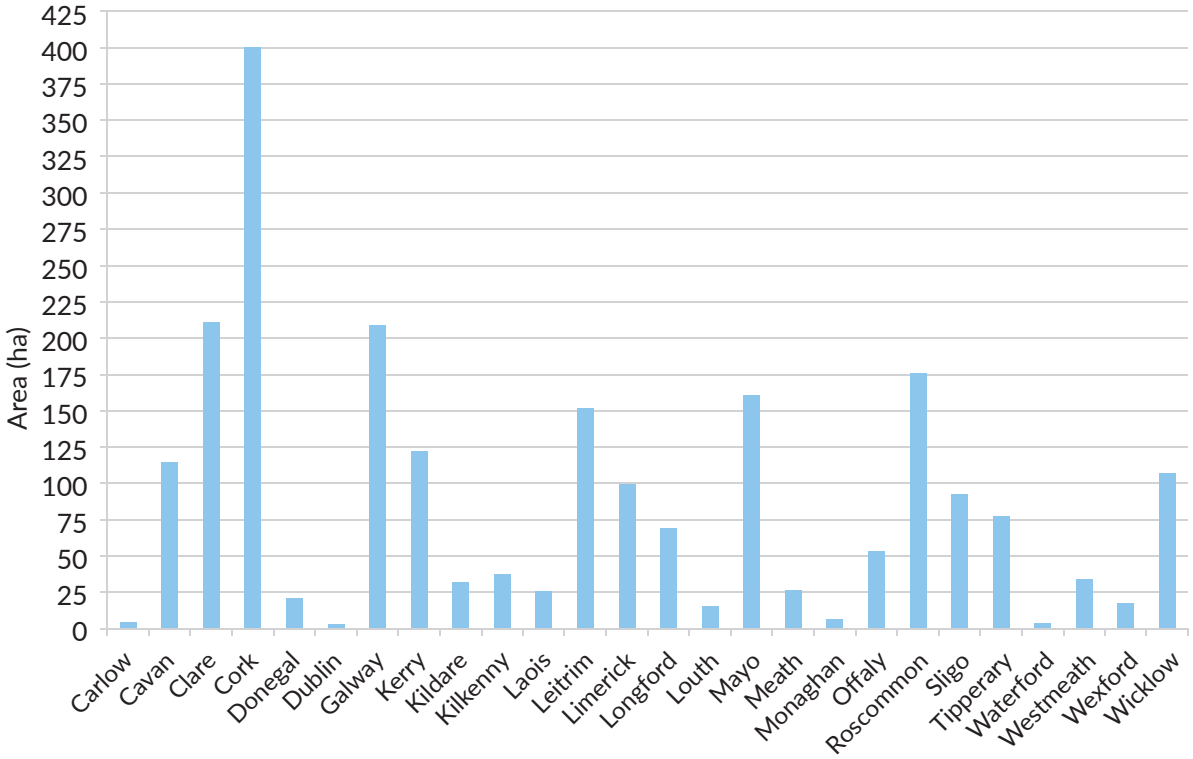
Broadleaf tree species account for nearly one-third (30.6%) of the stocked forest area, while conifer species are the dominant species present (69.4%). The share of broadleaf species nationally increased by 5.9% between 2006 and 2022.

The total growing stock volume of Irish forests is over 142 million m^3, an increase of over 25.5 million m^3 since 2017. The balance between increment and fellings is an important indicator as it describes the sustainability of wood production over time, the current availability of wood and the potential for the future. Gross annual volume increment between 2017 and 2022 was 10 million m^3 per year, while over the same period the mean annual standing volume felled was 4.1 million m3 per year. This wood mobilisation represents a valuable source of revenue for forest owners and a source of employment in the rural economy through harvesting, transport and downstream processing. Notably, the forest ownership balance has changed, where private forest owners, mainly farmers, now own approximately 50.9% of the national forest estate with the remainder in public ownership, mainly Coillte. In recent years non-farmers are responsible for the majority of private planting.

Afforestation in 2022

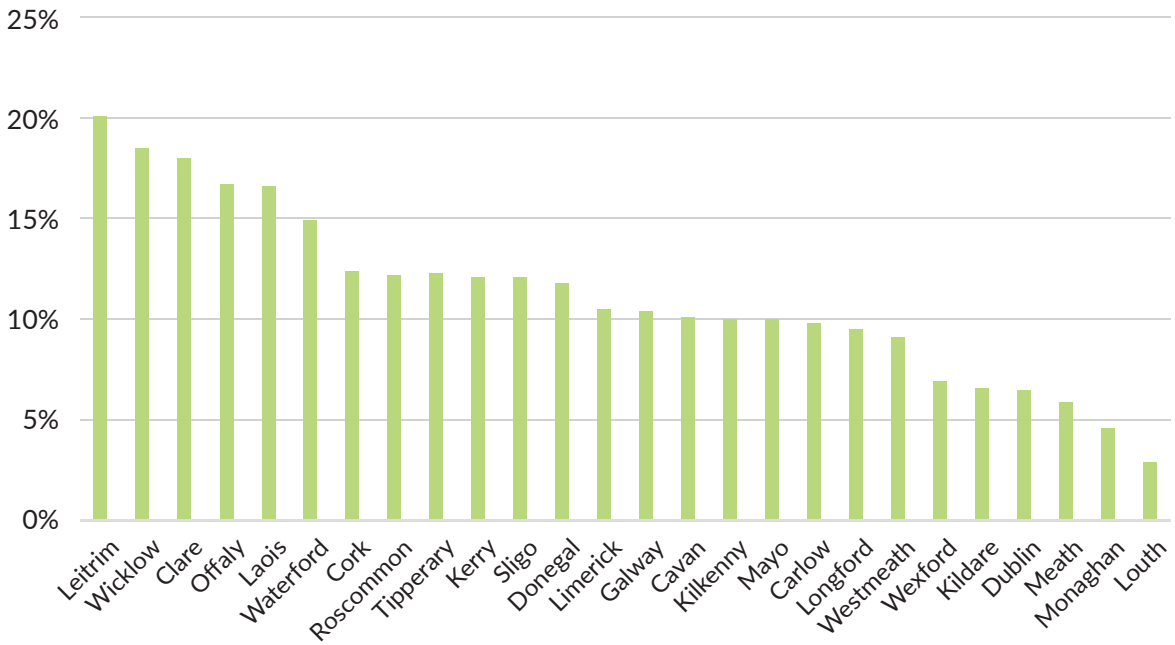
Payments were made by the Department in 2022 in relation to the afforestation of 2,273 hectares of land. Broadleaf planting, which includes the planting of native woodlands, accounted for 43% of this figure. Counties Cork, Clare, Galway and Roscommon had the highest levels of afforestation during 2022, with a range of between 400 and 176 hectares afforested. All counties had some level of afforestation, but counties Waterford, Dublin, Carlow and Monaghan had less than 10 hectares afforested each.

Figure 4.2 *Afforestation by County in 2022*



Source: *DAFM Forest Statistics*

Figure 4.3 *Percentage of forest cover in each county*



Source: *National Forest Inventory*

The level of planting of native woodlands in 2022 was 703 hectares, compared to 598 hectares in 2021, which is the highest level under the Forestry Programme so far and slightly exceeds the target. Broadleaf planting as a percentage of total planting also exceeded the 30% target set out in the Forestry Programme, with 42% of broadleaves planted in 2022.

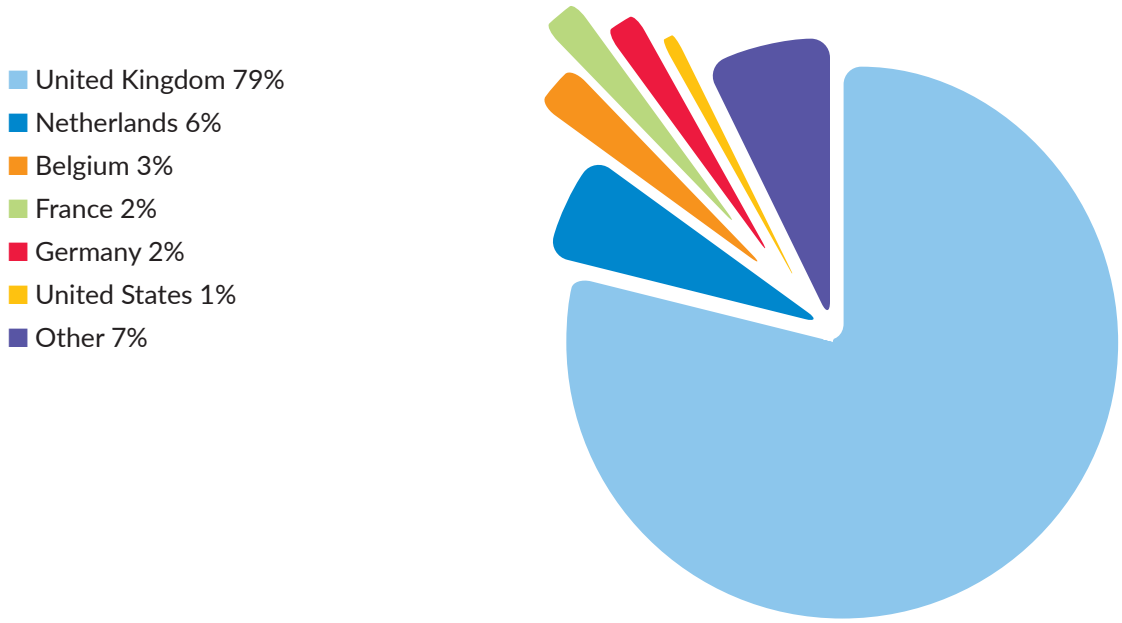
Since 2015, 8,322 hectares of broadleaf forestry has been established, which is 25.5% of the total new forestry established since 2015. Additional measures, such as support for tree guards and fencing to protect crops from deer damage, continuous cover forestry and additional supports for thinning of broadleaf forests were introduced in early 2019. These were important schemes for the support of the industry and contributed to the high level of broadleaf planting.

4.3 Trade

In 2022, Ireland exported 1,545,544 tonnes of forestry and wood-based products. These exports were valued at €784 million and went to over 50 countries worldwide. This represented a 13% increase in value on the previous year, while volume increased by 4%.

The United Kingdom is the largest destination for Irish exports by far, at €618 million or 1.3 million tonnes. It accounted for 79% of exports by value and 82% by volume for forestry and wood-based products. While the volume of these exports to the UK decreased by 3% on the previous year, export value increased by 10%. Apart from the United Kingdom, the Netherlands, Belgium, France, Germany and United States were key destinations for Irish Forestry and wood-based products.

Figure 4.4: *Top Destinations for Irish Forestry and Wood-based Products by value in 2022.*



Source: *CSO Trade Statistics*

Medium density fibreboard (MDF) accounted for 34% in value of forestry and wood-based product exports in 2022 and was worth €268 million, accounting for close to 235,000 tonnes. The United Kingdom was the most valuable destination for exports of MDF in 2022 at €199 million, an increase of 23% on the previous year. Wood of coniferous species had the second greatest export value with €195 million being exported in 2022, an increase of 4% on the previous year. The United Kingdom imported 95% of this total, accounting for 349,000 tonnes of the product.

4.4 Forest Wood Removals 2022

In July 2023, the CSO released their report on Forest Wood Removals for 2022. The survey was designed to collect data on roundwood and biomass removals from privately owned forests in Ireland. Information from the CSO Business Register, DAFM, and from industry experts was used to ensure that all relevant enterprises were included in the sample. The exclusion of publicly-owned forests from the survey was designed to simplify the questionnaire and to reduce the risk of double counting of removals. This could occur if both contractors and the forest owners submitted data for the same removals. Its key findings were as follows:

- The total value of roundwood removals was €251 million in 2022, an 11% increase from €227 Million in 2021.
- Roundwood removals decreased 4% from 4.3 million cubic meters in 2021 to 4.1 million cubic meters in 2022.
- Coniferous roundwood accounted for over 99% of removals in 2022.
- Large sawlog accounted for the highest proportion of roundwood removals volume at 38% in 2022, followed by pulpwood (27%) and small sawlog (26%).

Table 4.2 *total Removals by Product 2022*

Total Removals by Product 2022 ('000 tonnes)								
Product	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Large sawlog	913	989	1,092	1,151	1,130	1,308	1,538	1,383
Small sawlog	903	969	1,053	1,023	1,022	865	990	945
Stakewood	108	114	124	116	133	129	115	108
Pulpwood	923	858	925	1,006	1,092	901	959	979
Fuelwood	94	83	91	102	102	198	183	191
Roundwood for use as biomass	53	112	65	71	156	48	29	42
Woodchip	6	6	8	12	14	14	10	41
Short rotation coppice	0	0	0	0	0	0	0	0
Other woody material	0	0	0	0	0	0	0	2
Total	**3,000**	**3,132**	**3,358**	**3,482**	**3,647**	**3,463**	**3,825**	**3,690**

Source: *CSO Forest Wood Removals 2022*

4.5 Financial Supports 2022

Financial support schemes are provided by the Department to assist in the management of the current forest estate and for the creation of new forests.

In 2022, €70.4 million of capital expenditure was invested in forestry development, 88% of which went towards afforestation grants and premiums. The balance, of approximately €8 million, was spent on other support schemes such as forest roads for harvesting, woodland improvement, shaping of broadleaves and environmental assessments.

Table 4.3 *Annual capital expenditure on forestry schemes 2013 – 2022*

Year	Total Afforestation Programme €m	Forestry Support Schemes €m	Total Expenditure €m
2013	100.8	5.7	106.5
2014	102.5	5.6	108.1
2015	98.7	4	102.7
2016	98	4.2	102.2
2017	93.6	5.9	99.6
2018	86.4	6.4	92.8
2019	80.2	6.6	86.8
2020	71.6	6.0	77.6
2021	64.0	4.0	68.0
2022	64.3	6.1	70.4

Source: *Forest Statistics Ireland 2023*

Key to the success of increasing afforestation rates is to build confidence among landowners of the benefits of forestry as a viable option to complement existing enterprises. A package of €1.3 billion has been secured, which will support the biggest and best-funded Forestry Programme to date in Ireland.

The Forestry Programme 2023-2027 includes proposed increases in premiums for planting trees ranging from between 46% to 66%, alongside a longer term of 20 years for farmers. It has been designed in such a way that farmers will receive 33% more in annual premium payments than any other landowner in order to incentivise afforestation and to also provide a valuable addition to farm incomes.

Agroforestry is a land use option in which trees are grown in combination with agriculture on the same land, which is positive for animal welfare, improves biodiversity, can off-set emissions from other farming practices, and can prevent nutrient runoff when planted in strategic locations. In addition, it is possible to grow quality timber with little impact on existing agricultural production. Agroforestry was introduced to Ireland's forestry support schemes in 2015 and the measure mainly targeted at silvopastoral systems which combine forestry and pasture, including grazing and the growing of fodder. It is proposed to expand this in the Forestry Programme 2023-2027 with pilot schemes for silvoarable and forest gardening systems, and an increase in the number of premiums offered for agroforestry from 5 years to 10 years. There are 55.6 hectares planted in agroforestry since the scheme measure was launched in 2015.

In addition, DAFM is planning to incentivise small-scale tree planting aimed at re-engaging farmers with afforestation. Widening the options for small-scale tree planting measures is considered an important measure to make tree planting more attractive to farmers. This would

also allow for greater integration between the measures in the National Forestry Programme and the Common Agriculture Policy.

In this regard, Government approval was sought to amend the Forestry Act 2014, through Part 3 of the Animal Health and Welfare and Forestry (Miscellaneous Provisions) Bill, which was signed into law by the President on the 4th of April 2022. Under this new legislation, Section 2 of the Forestry Act 2014 was amended to allow for the planting of trees on areas up to one hectare or 20 metres in width, as part of a proposed scheme, which is subject to approval, without the requirement for an afforestation licence. The trees planted under this scheme have to be native tree species only, of which not more than 25 per cent are Scots pine. This change will allow forests to be created through initiatives other than the afforestation scheme, thereby contributing to Ireland's target in relation to a wide range of environmental priorities, particularly climate change, biodiversity and water quality.

4.6 Forestry Health & Afforestation Programme

Forest Health Status

Ireland's forest health status overall is relatively good. Ireland does not have the range of forest pests and diseases that are endemic on the continent and further afield and which have been influenced by the impact of climate change in recent years, causing enormous damage. However, Ireland has had a number of outbreaks of organisms harmful to trees and forests, which have had significant impact in recent years. These include the impact of *Hymenoscyphus fraxineus* (ash dieback disease) and *Phytophthora ramorum* disease outbreaks in Japanese larch. Both of these harmful organisms continued to have significant impact in 2022.

The Plant Health Regulation (PHR) EU 2016/2031 and Official Controls Regulation (OCR) EU 2017/625

The Forestry Inspectorate of DAFM is responsible for the implementation of the forestry aspects of the EU Plant Health Regulation 2016/2031 which includes forest health surveys for a wide variety of forestry pests, requirements for the implementation of traceability systems (Plant Passporting Systems) for the movement of forestry plants, coniferous wood and wood products. The Plant Health Regulation is implemented to the requirements of the OCR.

The Forestry Inspectorate also oversees the national implementation of the FAO, IPPC International Standard for Phytosanitary Measures (ISPM) 15, Regulation of Wood Packaging Material in International Trade also under the requirements of the OCR. Not only is this important in terms of imports and protecting Ireland's forests but also for companies exporting who require compliant wood packaging, thereby facilitating Irish exports of goods of all kinds.

Key Forest Health activities and events 2022

- The Department launched the Mid-Term Report on the Plant Health and Biosecurity Strategy 2020-2025 on 9th December 2022. The Plant Health and Biosecurity Strategy 2020-2025 sets out the importance of plant health and biosecurity for Ireland as well as ensuring that all stakeholders are aware of the risks to plant health, and their role and responsibilities to reduce that risk. The strategy seeks to minimise the threat posed to plants by the potential introduction and establishment of plant pests and diseases. The Mid-Term Report provides an assessment of progress across the 18 recommendations in the strategy.
- Brexit export certification and import control functions continued as significant responsibilities for DAFM in terms of import controls and export certification.
- Following the first finding of the eight-toothed spruce bark beetle *Ips typographus* in Kent in England in 2018, new breeding populations of the beetle were identified in Kent and east Sussex in 2021. There were further findings of the bark beetle in south-eastern England in 2022 and the demarcated area was extended by the British authorities. As part of the additional risk-based surveys since 2019, DAFM, in collaboration with Coillte, has maintained a supplementary network of risk-based bark beetle monitoring plots distributed through the Coillte estate. These new targeted monitoring plots complement and enhance the existing systematically distributed network of plots.
- In August 2022, the Scottish forestry authorities informed DAFM that the large larch bark beetle Ips cembrae had been detected in traps at three locations within the Pest Free Area (PFA) of Scotland. In total six beetles were captured. This is the first recording of the beetle inside the Scottish PFA. Scottish Forestry has conducted inspections in surrounding areas and no evidence of beetle activity or the presence of a breeding population have been found. As a result of the finding, DAFM in association with authorities of Northern Ireland agreed that exports of larch roundwood and bark from the PFA to the island of Ireland are suspended. Scottish Authorities have stated that they will not be issuing Phytosanitary Certificates for roundwood of larch from the PFA while wider surveillance is completed.
- In late 2021 a new Phytophthora, *P. pluvialis* was detected in Great Britain causing damage to western hemlock and douglas fir. The risk posed by this is still uncertain as the scientific understanding is developing. Surveys for its presence in Ireland were conducted in 2022 with no findings.
- A new system for the assessment of competence of authorised operators to issue Plant Passports hosted on the Forest Health web-page was developed and rolled-out to the sector. Fifteen forestry operators were authorised to issue plant passports in 2022.
- There were no findings of any EU priority pests or pests for which Ireland has current EU Protected Zone status in Irish forests, during annual surveys in 2022.
- Fifty four Irish companies are currently registered in Ireland to produce wood packaging material to the FAO IPPC International Standard for the Regulation of Wood Packaging Material in International Trade (ISPM No. 15), facilitating the export of goods worldwide from Ireland on compliant pallets and crates.
- In October 2022 DG SANTE of the European Commission conducted an audit of DAFM in order to evaluate implementation of the Plant Passport system in Ireland.
- DAFM's Forest Health webpage continued to be developed, providing information for all forest stakeholders.

Forest Reproductive Material

DAFM is responsible for implementing EU Council Directive 1999/105/EC on the marketing of forest reproductive material. Forest reproductive material (FRM) describes seeds, plants and cuttings, which are important for forestry purposes. The aim of the legislation is to ensure that forest reproductive material, which is marketed, is from approved suitable sources and is clearly labelled and identified throughout the entire process from tree seed collection to processing, storage, forest nursery production and delivery to the final forest user.

During 2022 DAFM continued to supply services in the:

- Registration of seed stands and maintenance of the National Register of Basic Material
- Registration of suppliers of forest reproductive material - seed collectors, nurseries, seed and plant importers and brokers
- Issuing of seed collection permits and master certificates of provenance for seed collections
- Advice on forest seed and plant regulations

A dedicated FRM webpage provides information to stakeholders on Forest Seed and Plant Marketing Regulations incorporating links to Ireland's List of Basic Material and the EU Commission's Forest Reproductive Material Information System (FORMATIS)

During 2022, DAFM engaged with the ongoing EU review of plant reproductive material and forest reproductive material legislation. The Commission is revising the legislation, with the aim to modernise it and to better align it with the goals of the European Green Deal and the Farm to Fork, Biodiversity, new EU Forest and EU Adaptation Strategies. The revision will seek for the legislation to be implemented in a more harmonised way across the EU, efficient and effective, more open to integrating new and future developments, and to contribute to sustainability goals, the protection of biodiversity and adaptation to, and mitigation of, climate change. The Commission is due to adopt its proposals for the revision of the legislation in the first half of 2023.

DAFM is also the National Designated Authority in Ireland for the OECD Forest Seed and Plant Scheme. This international scheme encourages the production and use of forest seeds, parts of plants and plants that have been collected, transported, processed, raised and distributed in a manner that ensures their trueness to name. Material covered by the scheme is intended for use in a variety of forestry purposes.

Since 1 January 2021 the OECD scheme is now the certification system required for all imports and exports of forest reproductive material to and from Great Britain. As the United Kingdom is no longer a Member State, two EU legislation decisions were enacted in early 2021 to recognise the necessary 'equivalence' of OECD certification for imports of FRM from Great Britain which were Decision (EU) 2021/536 of the European Parliament and of the Council and Commission Implementing Decision (EU) 2021/77.

During 2022, 83 OECD Certificates of Provenance were issued for exports to Great Britain – this included certification of forest plant and seed exports mostly for contract stratification and preparation. There were also significant quantities of forest seed imports in 2022 from Great Britain, which were certified under the OECD scheme, and from which multi-million numbers of forest plants will be produced. The import of seed in 2022 from Great Britain also included seed for contract growing of forestry seedlings for re-export to Great Britain.

4.7 Forests and Sustainable Development Goals

In 2015, the United Nations (UN) established 17 interlinking Sustainable Development Goals (SDGs) with the ambition of seeing these goals achieved by 2030. Forests are home to more than 80% of terrestrial species, including plants, animals & insects. They are crucial to reducing the risk of natural disasters, including droughts, floods & other extreme events, and play a vital role in mitigating climate change through carbon sequestration. The multiple roles and functions of forests, along with other types of forests lands and woodlands, must be protected.

Due to the important and diverse role that forests play in sustainable development, the UN adopted the first-ever UN strategic plan for forests 2017-2030. This plan provides a global framework for actions to halt deforestation and forest degradation and aims to help contribute to progress across the SDGs. This demonstrates how a clear forest strategy can help to achieve the aims of not only SDG 15 Life on land but can also help achieve the goals of many other SDGs. Forests are integral to the success for the 2030 agenda in terms of biodiversity, but also the green economy among other areas.

In December 2022, agreement in principle was reached between the European Council and European Parliament on an EU Deforestation Regulation that will seek to prevent the placing or export from the EU market of seven commodities (coffee, cocoa, cattle, timber, soy, palm oil and rubber) on land where deforestation occurred. In order to align with SDG 15.2, this will apply to all relevant commodities produced after 31 December 2020. The EU Regulation 2023/1115 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010, is now published in the official journal on the 9th June 2023

Forests can contribute with the production of renewable and sustainable timber products, aligning with SDG12 aim of sustainable use and management of natural resources. Forests can help drive the move to a low carbon and circular economy. While the SDG12 targets and indicators make no outright or direct reference to forests or forest-related communities, forestry can still play a vital role in their achievement. Linkages can also be found, for example between agricultural commodities and sustainable forest management.

4.8 Forests and Climate Change

Under the Paris Agreement, Ireland has committed to limiting global temperature rise to less than 2 degrees above pre-industrial levels and will strive to limit temperature rise to less than 1.5 degrees.

At EU level, environmental ambition must be stepped up to meet the increased EU target of reducing greenhouse gas (GHG) emissions to at least 55% below 1990 levels by 2030 across all sectors of the economy. In addition, the long-term strategy of the EU aims to achieve climate-neutrality by 2050 and the European Climate Law ensures that all EU policies contribute to this goal.

The European Green Deal sets the blueprint for the transitional change that is required out to 2050. To deliver on this, the European Commission has put forward a series of legislative proposals to make its policies fit for delivering the climate ambition.

The regulation for Land Use, Land Use Change and Forestry (LULUCF), the proposed revision of the Renewable Energy Directive (RED III), the Nature Restoration Law and the Carbon Removals Certification Framework (CRCF) will all have an important part to play in meeting the ambitious roadmap towards climate neutrality. The revised LULUCF regulation sets rules for emission reductions and carbon removals in the land use sector, including forest land. As a result, Member States now have binding targets to cut emissions from land use while increasing removals.

Ireland's LULUCF sector is currently a carbon source rather than a carbon sink. A 51% reduction in these emissions is very challenging, especially in terms of forest land, as it transitions from a sink to a source. This is due to a reduction in the level of afforestation, an increase in the level of harvest from the private forest estate, a decline in growth rates associated with age class legacy shifts and continued emissions from forests on organic soils Options to reduce emissions in forestry include increased afforestation, improved forest management and the rewetting of organic soils among others.

At national level, the Climate Action and Low Carbon Development (Amendment) Act 2021 set out the objective to achieve a 'climate neutral economy' within the State by the end of 2050. All parts of society and the economy have a role to play. Forests will be vital in Ireland's effort to achieve this objective as they sequester more carbon dioxide than other land use, thereby directly reducing GHGs in the atmosphere. When they are managed sustainably for wood production, carbon continues to be stored in the harvested wood, and forests will continue to remove carbon dioxide when the trees are replanted. This ensures that the level of carbon storage is maintained over the long term.

As part of the actions to reduce emissions within the LULUCF sector, there are a number of measures in the Climate Action Plan 2023 (CAP23) related to Forestry and Harvested Wood Products (HWP). The following is a list of policies, measures and actions that are set out in CAP23:

Afforestation

Incentivise an increase to annual afforestation rates from approximately 2,000 hectares per annum in 2021 and 2022 to 8,000 hectares per annum from 2023 onwards, to deliver an additional 28,000 hectares of afforestation across the first carbon budget period.

Forestry Programme 2023-2027

Launch a new Forestry Programme in 2023 focusing on the importance of climate-smart forestry and continue to support sustainable forest management (SFM) interventions across the entire forestry sector.

Coillte Estate

Continue to manage the Coillte estate to increase carbon storage by managing the age profile of the forest estate to improve its carbon efficiency; expanding proactive silvicultural management of the broadleaf estate; and redesigning peatland forests to improve the carbon balance.

However, in the coming years the emissions profile of the forestry sector represents a particular challenge as it transitions from a sink to a source. This is due to a reduction in the level of afforestation, an increase in the level of harvest from the private sector, a decline in growth rates associated with age class legacy shifts and continued emissions from organic soils.

Case Study

Ireland's Tree Volume and Carbon Calculator

The single tree volume model TreeModel got a major upgrade in December 2022. The upgraded calculator previously allowed forest owners and forest practitioners to quickly calculate the volume of a tree without having to cut it down or rely on time-consuming, destructive or expensive measurement methods.

The calculator estimates the volume of the tree using data input by the user: diameter at breast height and tree height. The sophisticated algorithm also allows users to input more detailed information such as the stump diameter or upper stem diameter to improve the accuracy. The conifer tree information used to develop the calculator was obtained from felled trees in experimental plots in Ireland from 1971 to 2006 amounting to 38,391 volume sample trees measured. While the broadleaf tree information was collected non-destructively using a remote diameter scope from 4,197 broadleaf trees across Ireland in 2013. The accuracy of the calculator has been verified through extensive testing and comparison to traditional measurement methods and has been found to be highly reliable.

The upgrades include:

- **Carbon stocks in the trees** - The user can now calculate the carbon stocks of a tree or stand. The inclusion of estimates of the carbon stored in the tree or stand is an important addition to the calculator, which can output three forest carbon pools. These are 1) aboveground biomass – this includes stems, bark, branches, needles, leaves and twigs, 2) belowground biomass – this includes living plant tissues located below the earth's surface in the tree roots and 3) the total of these. All three are measured in tonnes of carbon dioxide equivalent (t CO2-eq).
- **Forest stand estimates** - The volume and carbon for a batch of trees or for a forest plot can now be calculated by uploading a stand level spreadsheet file. Estimates can be exported for cataloguing or record keeping.
- **Available online** - As the calculator is web-based, it means that users will always be using the most up-to-date version and it can be accessed anywhere using a smartphone or a PC.

The calculator can provide valuable information for the sustainable management and monitoring of forests and offers to be a valuable asset for researchers, students, and anyone interested in learning about the volume or carbon dynamics of trees or forests. The calculator comes with a comprehensive user manual and sample data to get started and is available at the Tree Felling and Management.

4.9 Development of a Shared National Vision and Strategy for Forestry in Ireland

New Vision:

Project Woodland was tasked with establishing a cross-society vision of the role of trees, woods and forests in Ireland's future, along with the development of a new forest strategy. The Shared National Vision for Trees, Woods, and Forests in Ireland by 2050, published in September 2022, provides inspiration and motivation for the next three decades to deliver what is needed for our forests. It commissioned a series of engagement measures to assess the views of stakeholders and the wider public on the vision and Ireland's wider forest strategy.

These consultations included:

- An online public consultation survey, which received more than 3,000 responses from individuals, private organisations, public authorities and academic institutions.
- A deliberative dialogue event in the style of the citizens' assembly, featuring 99 people representative of the wider population.
- A public attitudes survey of more than 1,000 people based on face-to-face interviews.
- A study of the attitudes of local and rural communities which features a survey of more than 600 people, a series of focus groups, and an examination of international best practice.
- A youth forum run by Foróige, a youth development organisation working with 50,000 people aged 10-18.
- And a series of bilateral meetings between DAFM and key stakeholders.

This level of consultation was considered essential to create a truly shared cross-society vision for the future of trees and forests in Ireland.

Outcome:

It was notable that many of the same responses were repeated across the different engagements. There is overwhelming support – across all consultation strands – to plant more trees and forests. Ninety seven percent of people agree that Ireland needs more forests (online public consultation survey) while 85% of people feel there is too little forestry in Ireland (community engagement study). Three quarters of people are in favour of planting more forests in their own county, and 76% in their nearest urban area (public attitudes survey). Ninety-five percent of people agree Ireland needs to take action to meet our 18% target for forest cover, and 88% believe we should double – or even further increase – our annual afforestation targets to 16,000 hectares (deliberative dialogue). Overall, the consultation showed that the current level of forest cover in Ireland is too low and there is an urgent need for a greater level of ambition.

Climate change is highlighted as one of the most important reasons for planting more forests. Almost 98% of people said creating new forests is important or very important for climate change (public attitudes survey). A total of 54% of people believe there are no preferable land uses that provide the same benefits to climate change than forestry (community engagement study). Respondents in the youth forum made clear that clean air and carbon capture are among the most important benefits of trees as they act as "the lungs of the planet" (youth forum). A majority (52%) of people want to combat climate change by expanding forest cover beyond the 18% target; and they agree this will require farmers to become more involved in forestry (deliberative dialogue). Ultimately the ambition to expand forest cover depends on farmers and landowners deciding to plant trees on their land. This was highlighted in all six consultation engagements.

The findings of the various consultation methods and the Shared Vision assisted in developing a new draft Forest Strategy up to 2030 and a new Forestry Programme 2023-2027. The overarching objective of the new Forest Strategy is to radically and urgently expand the national forest estate to deliver lasting benefits for climate change, biodiversity, wood production, economic development, employment, and quality of life.

Ireland Outlook

Irish forests continue to supply increasing amounts of wood fibre for sawmilling, panel board mills and the wood energy markets. An updated All Ireland Roundwood Production Forecast 2021-2040 was published during 2021. The forecast predicts that the annual potential roundwood supply will increase from 4.7 million cubic metres in 2021 to 7.9 million cubic metres by 2035. This will be followed by a small decrease to remain constant at circa 7.6 million cubic metres up to 2040. Realising this large increase in potential production will entail significant capital investment in roads, harvesting equipment and wood processing. The Irish sawmilling sector is well placed to process this increased production in supply, with the majority of products exported to markets in the United Kingdom and further afield. Initiatives by DAFM such as knowledge transfer groups and forest road grants will continue to facilitate the mobilisation of timber.

Although there has been progress in the past few years with the certification of a small area of privately owned forests, this area will need to increase. This will ensure that sufficient certified material will be available in the coming years for Irish wood processors, in order for timber supply to access existing markets, both home and abroad. In 2021 the Coford Study on Private Forest Certification in Ireland outlined the next steps towards a national certification scheme for private forest owners, with support from the forest industry. This work was progressed in 2022, with a tender being issued for services to undertake the work and the associated tasks involved in preparing a business plan for the establishment of Irish Group Forest Certification Scheme.

EU Outlook

In 2022 the European Commission began to progress implementation of the EU Forest Strategy in consultation with Member States. A debate on how to progress the strategy took place at the EU Agri-Fish Ministerial Council in November 2022 and a sub-committee of the EU Standing Forestry Committee (SFC) was established to examine the issue of forest monitoring and reporting which was a key component of the EU Forest Strategy. The strategy aligns closely with the EU Green Deal and EU Biodiversity Strategy.

An agreement in principle was reached in December 2022 on the EU Deforestation Regulation and has now completed the trialogue process. The EU Regulation 2023/1115 on the making available on the Union market and the export from the Union of certain commodities and products associated with deforestation and forest degradation and repealing Regulation (EU) No 995/2010 is now agreed and was published in the official journal of the European Union on the 9th June 2023. The regulation will prohibit the placing on the EU market products produced in areas where deforestation and forest degradation has taken place, and will apply to cattle, coffee, cocoa, rubber, palm oil, soy, timber, and certain derivative products too. Operators will need to demonstrate that they have undertaken due diligence before placing these commodities on the market. A general approach on the Land Use and Land Use Change in Forestry (LULUCF) was also agreed as well as the progression of regulations on Nature Restoration and Renewable Energy.

Also, in 2022 the Food and Agriculture Organisation (FAO) held its conference on forestry in October 2022. The European Union positions was presented by the incumbent Czech presidency. Ireland contributed to the drafting of common EU positions leading up to the conference through its role on the Working Party on Forestry. Previously, the United Nations Forum on Forests and the World Forestry Congress both took place in May 2022. Ireland was represented at both events.

Highlights

The proposed Forest Strategy (2023-2030) is designed to provide an overarching framework that identifies the actions needed to implement the change required for Ireland's forests.

The proposed Forestry Programme 2023 – 2027 contains a series of 8 different interventions:

1) Forest Creation
2) Agroforestry
3) Infrastructure and Technology investments
4) Sustainable Forest Management
5) Developing skills and empowering the Forest Sector for Sustainable Forest Management
6) Open Forests: Social, Cultural and Heritage Forests
7) Climate Resilient Reforestation
8) Reconstitution

The Forestry Programme was published in August 2023 and the Forestry Strategy will be published later in 2023.

CHAPTER 5

Fisheries and Aquaculture

The value of Irish seafood exports has increased for the second year in a row, growing by **€33 million**, from €609 million to €642 million in 2022.

In 2021, Irish fishing vessels landed **51,476 tonnes** of Atlantic Mackerel at Irish ports, the largest quantity for any species.

In 2022, there were **8,218 people** employed directly in fisheries, aquaculture and processing, with a further 7,155 in downstream employment in ancillary and support sectors.

5.1 Overview

The seas around Ireland are among the most productive and biologically sensitive areas in EU waters. Fishing has always been of significant social and economic importance to Ireland. The natural, clean water around Ireland's 7,500 kilometre coastline has always been a source for outstanding seafood. Our seas are some of the most fruitful in the EU and this highly valuable resource is one we need to nurture and protect for our future generations.

The majority of fishery resources fall under the remit of Common Fisheries Policy (CFP), with the current iteration of this policy in place since 1st January 2014. The aim of this policy is to establish environmental, economic and social sustainability within our fisheries and aquaculture. This is to be done in a manner that results in a viable and competitive seafood sector for all. In February 2023, the EU Fisheries Commissioner published the Commission's assessment on the functioning of the CFP along with a package of measures to improve the sustainability and resilience of the fisheries and aquaculture sector.

This sector employed 15,373 people in 2022, helping to sustain vibrant rural and coastal communities across Ireland. This includes on fishing vessels, fish farms, in processing operations and in the distribution of seafood. This industry is essential to these communities and to the greater Irish economy.

5.2 Seafood Exports

Ireland

According to the CSO, the value of Irish seafood exports in 2022 was estimated to be €642 million, a 5% increase on the value attained in 2021. The value of exports of salmon and mackerel, which together account for one third of fish exports by value, both decreased in 2022 in volume and value terms. Salmon decreased by 4% in value with a volume decrease of 8%, while mackerel exports decreased in value by 12% with a 30% decrease in volume. Growth was seen for frozen and non-frozen crustaceans (+19% and +22% value growth respectively), other fish frozen (+27%), whelks (+36%) and oysters (+22%).

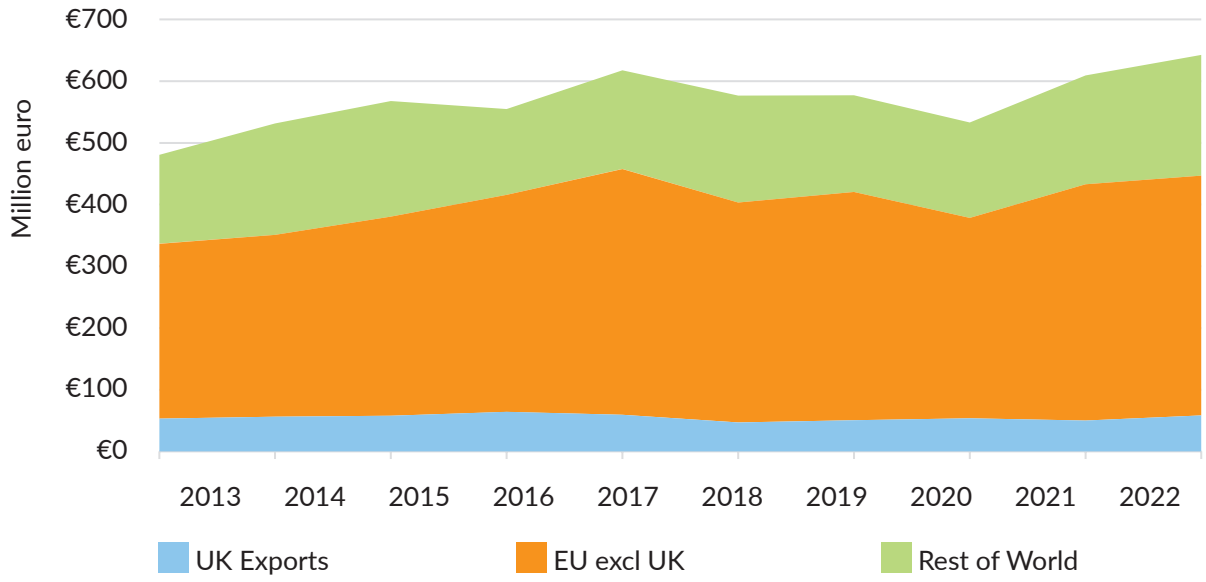
The volume of seafood exports in 2022 was 203,300 tonnes down 15% on 2021, but similar to exports in 2019 and 2020.

International

The main EU markets of France, Italy and Spain account for 45% or €289 million of total exports by value, while accounting for just 22% by volume, indicating the high value of these markets. Almost one quarter of the value of fish exports come from France. The United Kingdom accounts for 9% by value of our exports. Close to 6% by value of fish exports are destined for Nigeria but they account for one fifth of the volume, mostly frozen blue whiting and frozen mackerel. In total 62% by value goes to EU member states with 11% to Asia and 14% to Africa.

Exports to Japan, South Korea and Vietnam grew in value terms in 2022, increasing by 8%, 9% and 8% respectively, with the value of exports to China decreasing by 3%. Egypt is also becoming a valuable export destination with growth of 46% in value to €29 million and accounting for 17,800 tonnes up 21% on 2021.

Figure 5.1: *Worldwide Fish Exports by Value and Destination 2013-2022*



Source: *CSO*

Trade

In the pelagic sector, where the main commercial pelagic species caught by Irish vessels include mackerel, herring, horse mackerel and blue whiting, quotas decreased for all these species. Demand for pelagic species fell in Asia where export volumes of mackerel decreased by 20% and horse mackerel volumes decreased by 25%. The best performing pelagic market in 2022 was the Middle East, growing by 33% in value and 25% in volume terms. Exports of mackerel declined to all regions in 2022 with value of exports stable to Africa and Asia but with declines to the European Union and the Middle East. Value increased to the United Kingdom.

Exports of whitefish decreased by 18% in volume and 3% in value. Core markets in Europe saw a decrease in export values of 7%, with volumes decreasing 16%. Spain remains our main market for whitefish followed by France and Northern Ireland. Exports of whitefish to Northern Ireland decreased by 21% in volume but increased by 19% in value. The Irish whitefish total allowable catch decreased by around 1% in 2022 compared to 2021.

Export values and volumes of Irish shellfish increased in 2022 after the re-opening of hospitality sectors in its main markets throughout the year. Volumes increased by 3% while value increased by 14%. The EU was the main market for shellfish again and was the main contributor to the growth seen in this category.

The Irish oyster sector continued to grow strongly in 2022 with export values and volumes increasing by 4% and 18% respectively. Exports of oysters to France, and Singapore increased significantly in 2022 with modest growth to Hong Kong, but a strong decline to China overall (-40%).

In 2022, salmon export values decreased by 6% after a decrease in volume of 9%, while the price of Irish salmon recovered somewhat from the price decrease in 2021, as increased competition drove the organic salmon sector. The French market decreased in 2022 by 17% in value and is by far the main market for Irish salmon. Volume growth was seen to Germany with value of exports decreasing 1%. Exports of salmon to Poland fell in 2022 from 1,900 tonnes to 1,800 with value decreasing from €15m to €14m year on year. Average price of salmon was down in all the main markets due to the intense competition in the organic salmon sector.

Table 5.1 *Top Ten Fish Export Destinations by Value 2022*

Country	€Million	Tonnes
France	€154.19	27,390
Italy	€70.05	6,129
Spain	€64.71	10,285
United Kingdom	€58.53	14,139
Nigeria	€36.97	41,775
China	€35.15	7,762
Egypt	€28.65	17,814
Germany	€23.99	5,398
Poland	€20.49	5,711
Japan	€17.99	8,727

Source: *CSO*

5.3 Fish Quota Management

In 2022, DAFM was responsible for the management of over 158,383 tonnes of fish quotas. The management arrangements for quotas differ from species to species and are determined by the Minister following regular formal consultation with industry representatives. A key objective of whitefish quota management is the avoidance of very early closure of fisheries through rapid exhaustion of quota. This is important as our whitefish fisheries are mixed, and an early closure may lead to discarding of fish and would undermine the effective implementation of the landing obligation which prohibits discarding of fish at sea.

The nine principal pelagic stocks of mackerel, Irish sea herring, Celtic sea herring, northwest herring, atlanto-scandian herring, horse mackerel, blue whiting, boarfish and albacore tuna are also managed. The particular management of each is further subdivided between various sectors of the fleet. The fishing of pelagic species is generally confined to spring and the autumn. Since 1st January 2015, pelagic stocks have been subject to the landing obligation.

In December 2017, to align the principles of the landing obligation to Ireland's quota management system, a conservation measure was put in place. The measure, a quota balancing policy for pelagic stocks, was put in at the request and in cooperation with industry representatives. This was expanded to cover key demersal (whitefish) stocks in a policy set down in April 2019. Quota balancing means that when a catch limit allocated to a vessel is exceeded, a balancing adjustment will be made from future allocations of fishing opportunities and will operate independently of any other action being considered by the control authorities. Pelagic stocks have been quota balanced for all years commencing in 2018. Quota balancing for five key demersal (whitefish) stocks was implemented in 2020 and 2021. From 01 January 2022, four additional demersal (whitefish) stocks became subject to quota balancing.

In 2022, a total of 110 tonnes of demersal stocks, with an estimated overall value of €0.32 million, were recouped, and over 5,800 tonnes of pelagic stocks were recouped quota, with an estimated value of over €3.8 million.

5.4 Employment

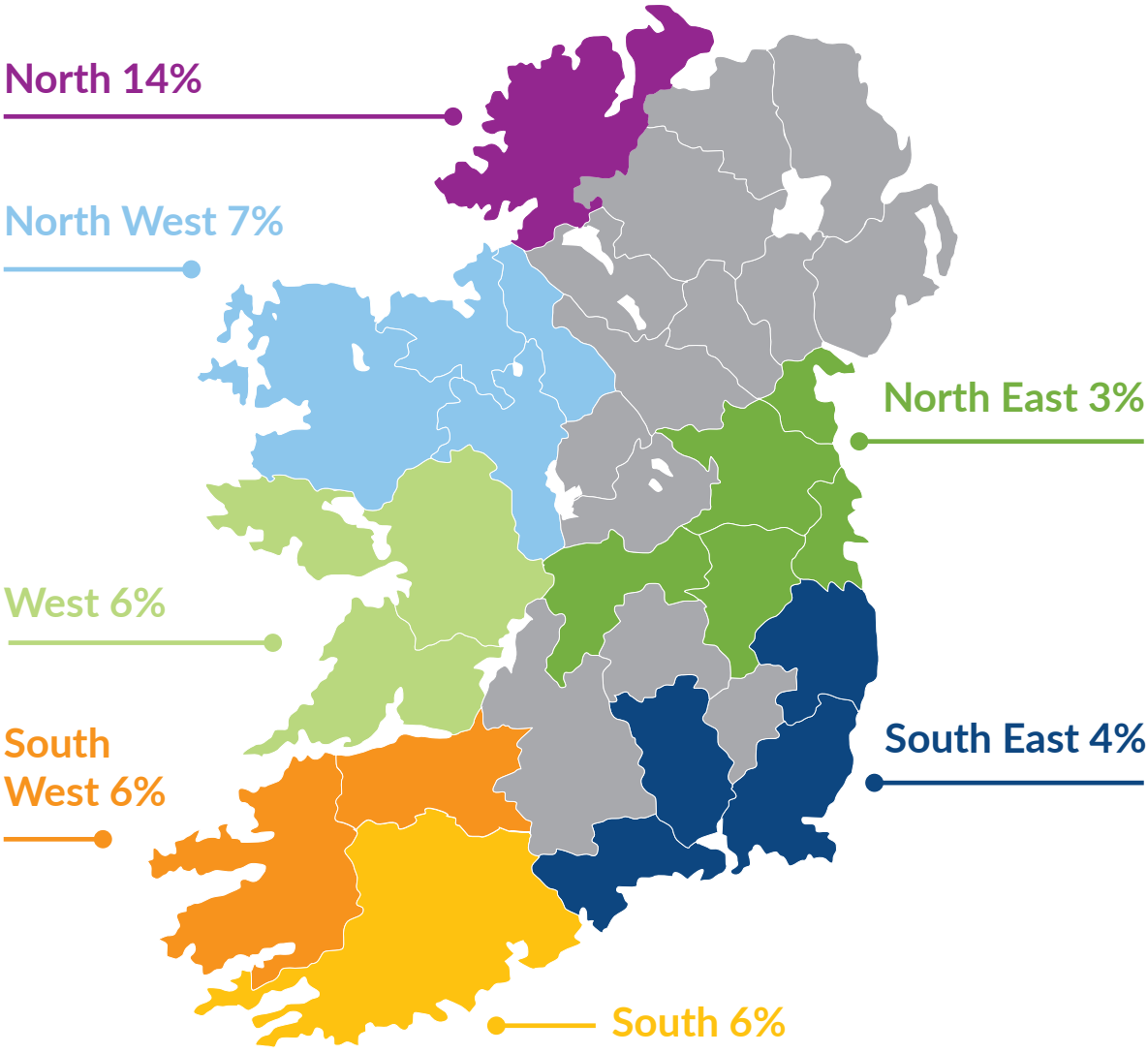
The seafood industry plays a vital role in the sustainable economic viability of many coastal communities across Ireland. The sector provides over 15,000 direct and indirect jobs with 8,218 employed directly in fisheries, aquaculture and processing and a further 7,155 in downstream employment in ancillary and support sectors. According to BIM, numbers employed by the sector have fallen in 2022 but despite this reduction, employment remains high in coastal regions, with the seafood industry accounting for 14% of coastal employment in Donegal, 7% in the north-west region, 6% on the south-western and southern coasts and 6% in Galway-Clare. The seafood industry, as a whole, accounted for 6% of total coastal employment, generating significant socioeconomic value in these areas.

Table 5.2 *Employment in the Seafood Industry, 2021 and 2022*

	2021			2022		
	Full Time	Part Time	Total	Full Time	Part Time	Total
Fisheries	2,353	495	2,848	2,600	174	2,774
Aquaculture	1,111	873	1,984	1,149	870	2,019
Processing	2,973	900	3,873	2,655	770	3,425
Ancillary			7,942			7,155
Total			**16,647**			**15,373**

Source: *BIM*

Figure 5.2: *The Breakdown of Employment by Region*



Source: *BIM The Business of Seafood Report 2022*

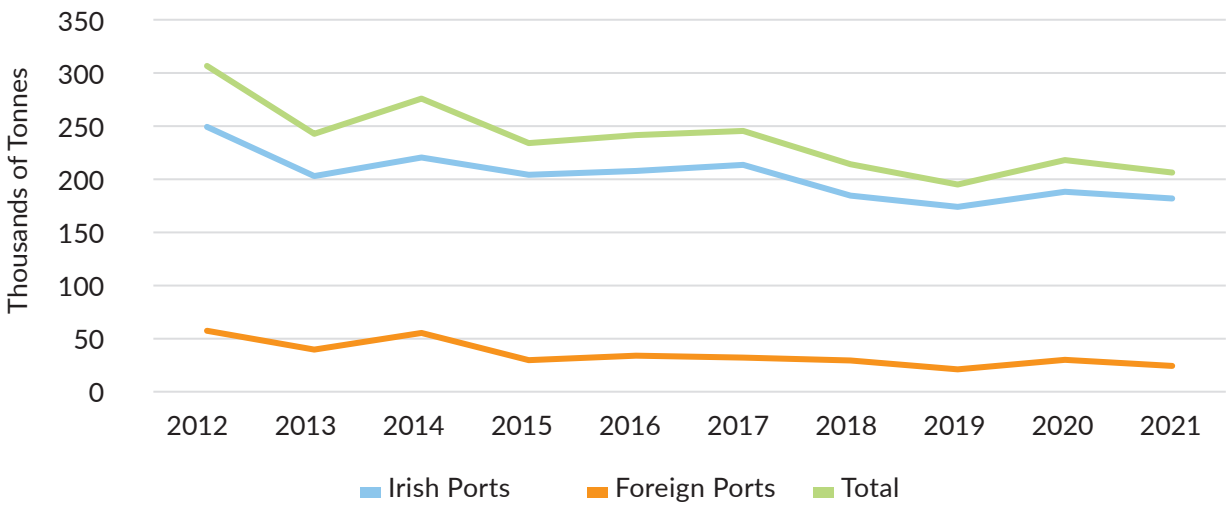
5.5 Fish Landings

The CSO's most recently released data for fish landings is for the year 2021. Fish landings by Irish trawlers decreased by 5% between 2020 and 2021 from 217,981 tonnes to 206,068 tonnes. Landings by Irish vessels in Ireland fell by 3% or 6,259 tonnes. Landings by Irish vessels in foreign ports decreased by 19% or 5,655 tonnes. Landings by foreign vessels in Ireland decreased by 14% or 19,538 tonnes.

The highest level of landings by Irish vessels in Ireland during 2012-2021 was in 2012 when 249,205 tonnes were landed. The highest level of landings by Irish vessels in foreign ports during the same period was also in 2012 when 57,339 tonnes were landed. Approximately half of this (29,119 tonnes) was boarfish.

> *Fish landings by Irish trawlers decreased by 5% between 2020 and 2021 from 217,981 tonnes to 206,068 tonnes.*

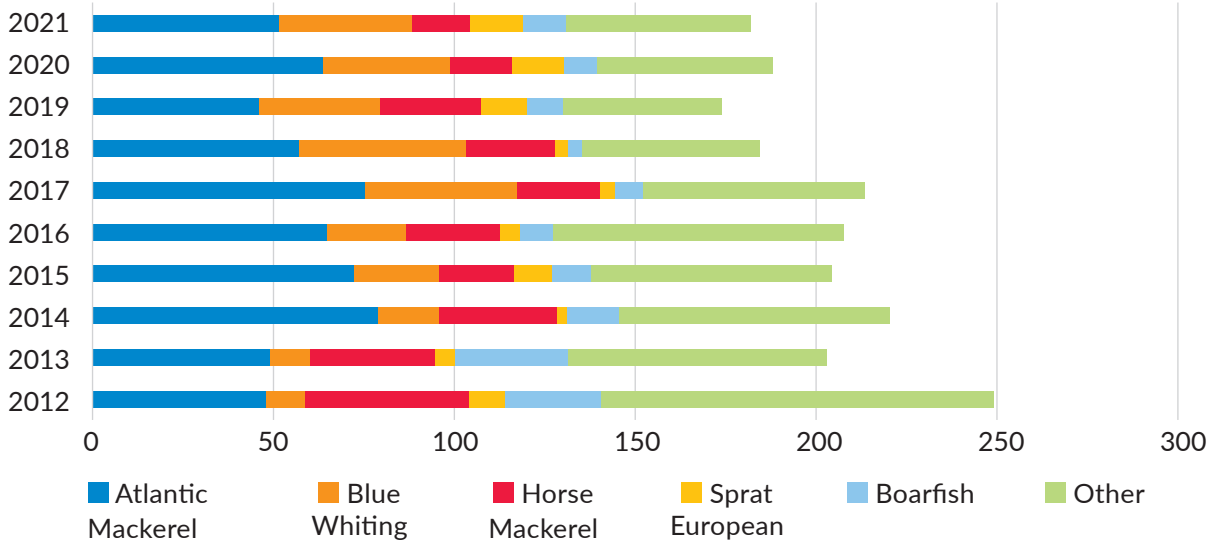
Figure 5.3 *Tonnes of fish landed by Irish vessels in Ireland and in Foreign Ports, 2012-2021*



Source: *CSO*

In 2021 the species with the largest quantities landed by Irish vessels in Ireland were Atlantic Mackerel (51,476 tonnes), Blue Whiting (36,769 tonnes) and Horse Mackerel (16,246 tonnes). Over the 2012-2021 period, Atlantic Mackerel and Lobster Norway have consistently been the two species with the highest value landings by Irish vessels in Ireland, a pattern continued in 2021 with Atlantic Mackerel valued at €60 million and Lobster Norway at €55 million.

Table 5.4 *Landings by Irish Vessels in Ireland by Species 2012-2021 (Tonnage)*



Source: *CSO*

Killybegs accounted for 55% (114,060 tonnes) of all landings by Irish vessels in 2021. Killybegs (89,276 tonnes) and Castletownbere (20,352 tonnes) were the ports with the highest tonnages landed by foreign vessels in Ireland.

In terms of tonnes landed by Irish vessels the busiest months were January to April and October to November. In 2021 approximately 66% of the catch landed by Irish vessels was between January and April. There was greater variability at species level e.g. 70% of landings by Irish vessels of blue whiting in 2021 took place in March, 58% of Atlantic mackerel occurred in January 2021, 58% of boarfish was landed in November and 63% of tuna albacore was landed in August.

5.6 Aquaculture Licencing

Despite the difficulties presented by the COVID-19 crisis in 2021 and first half of 2022, aquaculture licence applications have continued to be processed. There has been a significant increase in new shellfish licence applications over the past two years.

Work on the backlog in processing finfish licence applications is progressing. The majority of operators submitted Environmental Impact Statements/Environmental Impact Assessment Reports (EIS/EIAR) documentation by the final deadline of 30 June 2021. However, further work is required in relation to a number of the applications, including in respect of the EIS/EIAR documents received. The Department is currently engaging with those operators concerned in relation to the outstanding documentation. Once the necessary documents are received, and the required technical and scientific reviews are completed, the applications will then proceed to both public and statutory consultations in accordance with the relevant legislation.

In July 2022 phase one of AQUAMIS (Aquaculture Management Information System) was launched. Phase one involved the production of a public facing aquaculture licence viewer which will allow all stakeholders involved in the licensing process, as well as the general public, to view licenced aquaculture sites. This will add an additional layer of transparency to the licensing process. The development of the viewer involved close collaboration between DAFM and the Marine Institute. Work on the development of Phase II is ongoing.

5.7 Inshore Fisheries

The implementation of the Strategy for the Irish Inshore Fisheries Sector 2019-2023 continued in 2022, with the Strategy Implementation Group progressing actions it identified as having priority for the sector. Bord Iascaigh Mhara (BIM) is leading the implementation of this industry strategy in partnership with the National Inshore Fisheries Forum (NIFF) and the National Inshore Fishermen's Association (NIFA). A digital literacy syllabus for upskilling the inshore sector was developed and delivered using funding from the European Maritime and Fisheries Fund (EMFF). An improved level of digital literacy within the sector should allow it to engage more effectively with existing structures and to also better organise and advocate on behalf of the sector.

An analysis of the inshore sector via National Seafood Survey data was completed and a gap analysis to inform the design and commissioning of an inshore census continues to be progressed. The census seeks to provide accurate and up to date industry relevant socio-economic information on the inshore fisheries sector.

The NIFF met on four occasions during 2022. Following the impact of the Covid-19 pandemic, these meetings continued to be held virtually to discuss and develop proposals concerning inshore fisheries and their interactions with Natura 2000 sites as relevant. The NIFF is supported by a network of six Regional Inshore Fisheries Forums (RIFFs), which involve representation from inshore fisheries and other marine stakeholders. A dedicated website provides information on the work of the Forums: www.inshoreforums.ie.

Minister McConalogue announced in December 2022 an initiative to establish a Brown Crab Working Group to review the current arrangements in place for that fishery and to examine management options likely to support the sustainability of brown crab stocks in Ireland. The Group is expected to include relevant stakeholders such as representatives from industry bodies and be led and supported by BIM along with the Marine Institute, the Sea-Fisheries Protection Authority and officials from DAFM.

The all-island mussel seed fishery continued in 2022, with the autumn fishing season commencing in the Irish Sea on 3rd September and the Castlemaine Fishery opening on 17th September. There were 55 authorisations issued for the Irish Sea Fishery, with 11 authorisations following in respect of Castlemaine for 2022. Both fisheries closed on 18th December 2022.

Mussel farmers fish for wild mussel seed that is then transplanted onto their licensed aquaculture sites for on-growing and later harvesting. The volume of seed which was fished in 2022 amounted to 11,379 net tonnes, representing an increase of 23% on the 9,270 net seed tonnage from 2021. The mussel seed fishery continued to be certified by the Marine Stewardship Council (MSC), with the body recognising that the seabed mussel fishery is managed sustainably in accordance with MSC's principles and criteria for sustainable fishing.

5.8 Sustainability

The Clean Oceans Initiative was launched in January 2019 to help keep our oceans clean and healthy, and to protect against the harmful effects of marine litter and plastic pollution. The Initiative is managed by BIM and is supported by the European Maritime, Fisheries and Aquaculture Fund (EMFAF). Several activities form part of the initiative including 'Fishing for Litter' which encourages fishers to collect any litter or debris they come across while working at sea. BIM provides reusable bags and any marine waste collected is brought ashore by fishers, with relevant Harbour Masters and wider fishing port staff organising for it to be recycled or disposed of in a responsible manner. This work is voluntary and helps to keep litter out of the ocean and to protect Ireland's marine environment and marine life. By the end of 2022, 96% of the mainly offshore fleet were officially registered as part of the initiative at 12 ports. Ireland's fishing sector has collected more than 900 tonnes of marine litter as part of its 'Fishing for Litter' activities to date.

In June 2022, Minister McConalogue announced the launch of the Clean Oceans Initiative Fishing Gear Retirement programme. Over 130 tonnes of retired gear has been collected to date. Ireland's aquaculture producers are also actively participating in the Clean Oceans Initiative. More than a dozen aquaculture groups across Ireland take part in regular pier and shore clean-ups organised by BIM. In the region of 100 tonnes of marine waste was collected as part of these activities during 2022.

The recently published Climate Action Plan 2023 includes an action to "maintain and seek ways to improve on the participation rate of 96% in the Clean Oceans Initiative." Steps to assist in the delivery of this action include working with industry to develop systems for the circular economy of fishing gear, further implementation of the gear retirement scheme, and maintaining supports to ports and participation from industry in the 'Fishing for Litter' campaign.

DAFM continues to support the Clean Oceans Initiative, and removal of litter from the ocean, to protect the marine environment from degradation.

5.9 Biodiversity

DAFM's Statement of Strategy includes actions to support the ecosystem in inshore waters and promote environmental sustainability in Irish waters to protect fishers and fish stocks into the future. This involves ensuring that sea-fishing activities, which can include a variety of fishing gears, are conducted in a manner that avoids the deterioration of designated features of Natura 2000 sites and the significant disturbance of protected species within those sites. Management measures can be introduced as a result of an Appropriate Assessment or Risk Assessment depending on the context of the sea-fishing activity, and particularly where an assessment determines that a fishing activity may pose a threat to a protected habitat and/or species. Such scientific assessments include Appropriate Assessments for the mussel seed and Dundalk cockle fisheries, and Risk Assessments on fishing activities in the Irish Sea and south

and west coasts and their potential interactions with Natura 2000 sites. A suite of management tools can be put in place to facilitate co-existence between commercial sea-fishing activities and protected habitats and species. For example, the opening of fisheries for limited periods, restricting areas where fishing can take place in certain circumstances and limiting outtake or landings from a particular fishery as deemed necessary.

In November 2022, DAFM received a draft Fisheries Natura Plan (FNP) prepared on behalf of industry in respect of seed mussel fishing in the Irish Sea for 2023-2027. The Marine Institute has commenced screening of the draft FNP for appropriate assessment purposes, and if necessary, the Marine Institute will prepare an Appropriate Assessment report as required under S.I. No. 290 of 2013.

DAFM actively engages with the Department of Housing, Local Government and Heritage in relation to the expansion of Ireland's network of Marine Protected Areas (MPAs) and in respect of the General Scheme of the Marine Protected Areas Bill. Well-managed MPAs can foster healthy marine ecosystems and help address biodiversity loss which can benefit the seafood sector. Careful management and collaboration with the seafood sector is required to ensure that the expansion of Ireland's MPA network is successful.

5.10 Highlights

The negotiations between the EU and United Kingdom on 2023 fishing opportunities concluded in late 2022 before the 20 December deadline set out in the EU-UK Trade & Cooperation Agreement. This allowed total allowable catches (TAC's) and quotas to be set for the full year, providing certainty and stability for our fleet.

In 2022, a TAC was set for the 2023 spurdog fishery for the first time in over 10 years allowing for the re-opening of this fishery. The spurdog fishery is a new fishing opportunity with a fish quota of 1,871 tonnes set for Irish fishers in 2023.

In 2022, the scientific advice from International Council for the Exploration of the Sea (ICES) was that the herring in 6A South could be managed again as a commercial stock in 2023 with a fish quota of 1,720 tonnes set for Irish fishers. It had been managed as a scientific fishery from 2016 to 2022.

Also in 2022, the Sea-fisheries (Miscellaneous Provisions) Act, to give effect to the Masters' Points System, was signed into law by the President on 15 March 2022 - in line with the Programme for Government commitment to "Implement a fair EU Points system, in order to protect fish stocks and ensure the release of suspended EU funding". The introduction of the points systems for masters (along with the previously introduced separate point system for sea fishing boat licence holders) will play a vital role in delivering on the CFP objective of ensuring proportionate, effective and dissuasive penalties for serious infringements, and contribute to a level-playing field in fisheries control across Member States.

5.11 Challenges

The simultaneous roll-out of new policy objectives and targets across Climate, Biodiversity, Energy and Recovery & Resilience, some of which were in direct response to the war in Ukraine, creates a highly dynamic environment in which the Seafood sector needs to be considered. Offshore Renewable Energy, Marine Protected Areas and Nature Restoration proposals need to give significant consideration to the fact that fishermen as primary food producers are long standing in-situ users dependent upon specific marine areas which are particularly important for seafood production.

Seafood primary production is critical to supplying the downstream indigenous seafood processing and export industries and in sustaining the livelihoods of coastal communities, which are often rural. The importance of these primary and secondary seafood production activities is reflected in the agri-food sector's Food Vision 2030 strategy, and needs to be firmly embedded in cross-cutting policies to avoid unwarranted economic and social impacts, including on jobs in coastal communities dependent on the seafood sector.

The areas which are particularly valuable for seafood production are not ubiquitous within Ireland's marine area and this key criterion needs to be reflected in the identification of sites for energy or biodiversity purposes. Particularly with regard to renewable energy, ensuring spatial avoidance and/or co-existence rather than displacement would also assist a speedier and less fractious passage of project proposals through the consent process. In this way, Ireland can continue to support a sustainable seafood sector within dependent coastal communities and successfully achieve on climate and other targets into the future.

5.12 Ireland and EU Outlook

Following the United Kingdom's withdrawal from the EU, the majority of fish stocks of relevance to Ireland, which were previously exclusively Union resources, are now shared resources under international law. The European Commission has the sole competence to negotiate with third countries (including the United Kingdom) on behalf of the EU on the setting of fishing opportunities. The consultations between the EU and United Kingdom on 2023 fishing opportunities for shared stocks began on 7 November 2022 and concluded on 20 December 2022. The EU-UK Trade and Co-operation Agreement (TCA) sets 20 December as the deadline for the parties to reach agreement on fishing opportunities for the following year. If agreement isn't reached by 20 December, the TCA provides that each Party shall set provisional Total Allowable Catches (TACs). As agreement was reached by the deadline, there was no need to set provisional TACs and quotas this year.

The fishing opportunities set for 2023 will see increases in quotas for some of Ireland's most important commercial stocks including prawns (nephrops), Celtic sea monkfish, hake and megrim and north-west haddock and whiting. Restricted, by-catch only quotas have been set for some vulnerable stocks caught in mixed fisheries, including cod stocks around the coast and for the horse mackerel stock, to help these stocks recover. The spurdog fishery will be reopened in 2023, after it was closed for over ten years to rebuild that stock. In addition, the Northwest herring fishery will be re-opened as a commercial fishery. This fishery was closed, other than for the collection of data for scientific purposes, since 2015.

European Commission Report on the CFP

The Common Fisheries Policy (CFP) Regulation, Regulation (EU) 1380/2013, provides that the European Commission will report to the European Parliament and the Council on the functioning of the CFP by the end of 2022.

In preparation for this report, in February 2022, Minister McConalogue established a national Common Fisheries Policy Review Group to identify the key issues for Ireland in any revision of the policy. The Group was chaired by Mr. John Malone, former secretary general of DAFM, and assisted by a steering committee comprising Mr. Micheál Ó Cinnéide, former Director of the MI and EPA, and Mr. Donal Maguire, former Director in BIM. Mr. Michael Keating, former BIM Deputy CEO, was rapporteur for the Group. The Group involved representatives of key stakeholders, including Producer Organisations, the National Inshore Fisheries Forum, the aquaculture industry, co-ops, the seafood processing industry and representatives of environmental NGOs.

The CFP Review Group submitted its final report to the Minister in August 2022. The report, which the Minister formally submitted to the Commission, included key recommendations that the full impact of Brexit on the functioning of CFP must be addressed.

In February 2023, the EU Fisheries Commissioner, Virginijus Sinkevičius, published the Commission's assessment on the functioning of the CFP along with a package of measures to improve the sustainability and resilience of the fisheries and aquaculture sector. These

measures include a report on the Common Market Organisation for fisheries and aquaculture; a Communication on the energy transition of the fisheries and aquaculture sector, and an Action Plan to protect and restore marine ecosystems for sustainable and resilient fisheries.

Initial discussions on the CFP report took place at the Agriculture and Fisheries Council on 20 March 2023. Ireland welcomed the progress that has been made under the current CFP over the past decade in improving the sustainability of fish stocks and also the Commission's recognition of the fundamental role played by stakeholders in driving these positive changes. Ireland also expressed concern about the impacts of Brexit, which were not fully covered by the report, and called for the development of a comprehensive Northeast Atlantic Fisheries Strategy that will protect and enhance Irish and EU interests.

The March Council discussion was an initial exchange of views on the package and further discussions will take place during 2023.

CHAPTER 6

Agri-Food sector trade

The value of agri-food exports for 2022 totalled **€19 billion**.

Exports to the United Kingdom, our largest trading partner, increased by **€926 million to €6.8 billion** in 2022.

The Prepared Consumer Foods sector accounted for **€3.2 billion** in exports in 2022.

6.1 Overview

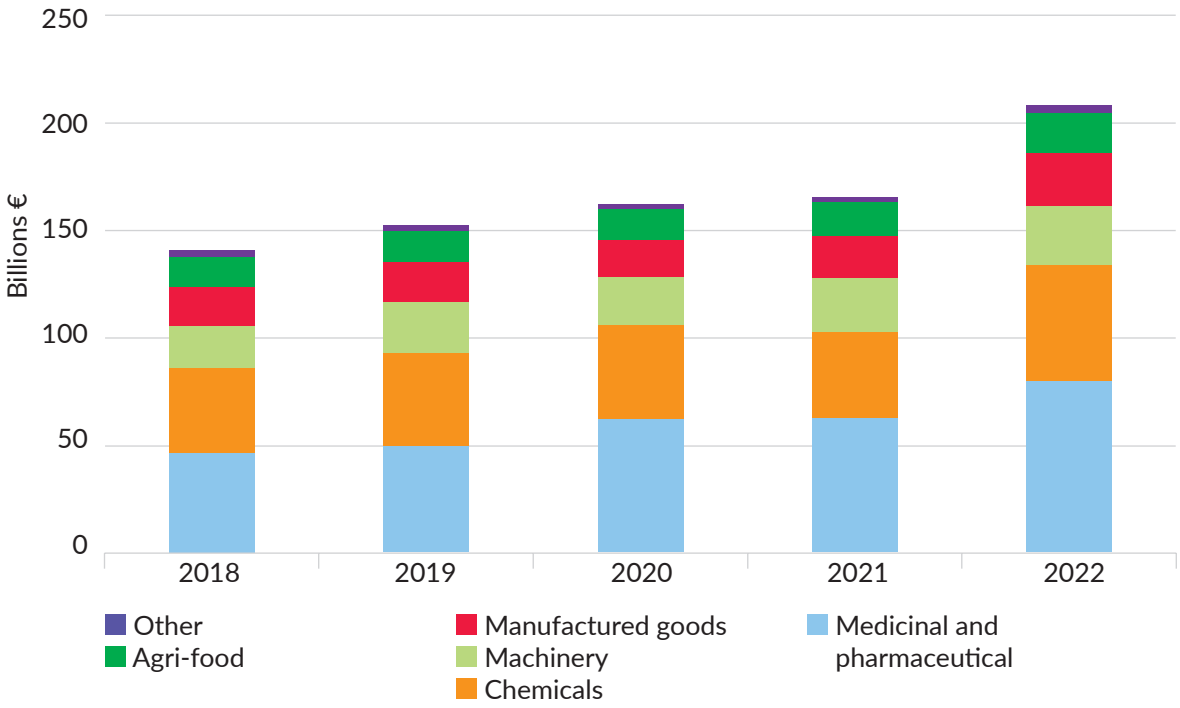
Agri-food is Ireland's largest indigenous exporting sector, with most of the food produced here going to over 180 countries worldwide. Ireland had total agri-food exports valued at a record €19 billion in 2022. The Food, Drink & Primary Production sector accounted for 40% of all export sales by Irish-owned companies in 2021 directly supporting 6.5% of total employment (164,900 people), predominantly in rural and coastal communities, in 2022. This significant domestic economic footprint, including its export profile, reflects the natural comparative advantages of Irish production and a long agricultural tradition.

Irish agri-food exports reached €19 billion in 2022, an increase of €3.4 billion or 22% on the previous year. Dairy produce was the largest of these exports at €6.9 billion (+33%), an increase of €1.7 billion on 2021. Beef, the second most valuable export, was up by €620 million to €3.1 billion (+25%). There was an increase in the value of export of beverages by €297 million to €2.1 billion (+17%), animal feed was up €150 million to €698 million (+27%) and cereal & cereal preparations exports were up €114 million to €620 million, (+22%). The only decreases in export categories were in fruit & vegetables down €41 million to €179 million (-19%), other meat & meat produce decreasing by €4 million to €26 million (-15%), and wool, flax & cotton dropping by €700,000 to €6.6 million (-10%).

While there were significant increases in the value of exports across most categories, this was primarily driven by increases in prices. Over half of product categories saw modest growth in volume, while the others saw decreases, resulting in 1% growth in volume overall.

Ireland's total merchandising exports totalled €208 billion in 2022, an increase of 26% year on year, with agri-food exports accounting for 9% of these exports. With over 90% of Irish beef, sheepmeat and dairy produce exported each year, Ireland capitalises on its position as an open economy producing food that is safe, nutritious, and appealing at home and abroad.

Figure 6.1 *Merchandising exports by value, 2018 – 2022*



Source: CSO

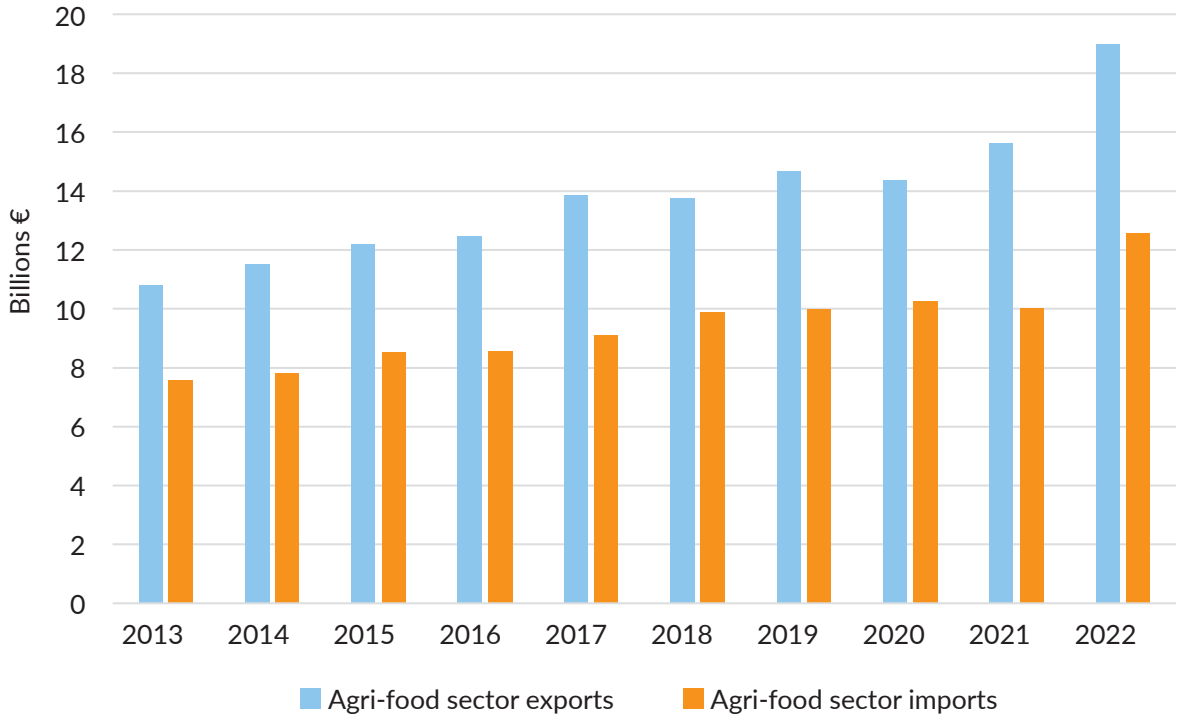
This chapter looks at agri-food exports, by product category and destination country, agri-food imports, by product category and country of origin, as well as prepared consumer foods. There are also two case studies, one focusing on the Japanese market and one focusing on exports of beverages globally.

6.2 Agri-food sector trade

Agri-food sector trade is broken down into 22 categories identified and agreed upon by the Department of Agriculture, Food and the Marine and the Central Statistics Office. Products and Raw Goods are categorised using combined nomenclature (CN) codes, a European harmonised system used to classify goods for customs and trade reasons. These categories include non-edible Agri-food items such as forestry and animal hides and skins (not included as part of Bord Bia trade statistics), along with traditional food and beverage products.

Ireland's agri-food exports reached a record €19 billion in 2022, an increase of €3.4 billion or 22% on 2021. Agri-food imports were €12.6 billion, an increase of €2.6 billion or 26%, accounting for 9% of Ireland's total merchandising imports. The resulting trade surplus in agri-food trade was €6.4 billion in 2022.

Figure 6.2 *Agri-food Trade, 2013 – 2022*



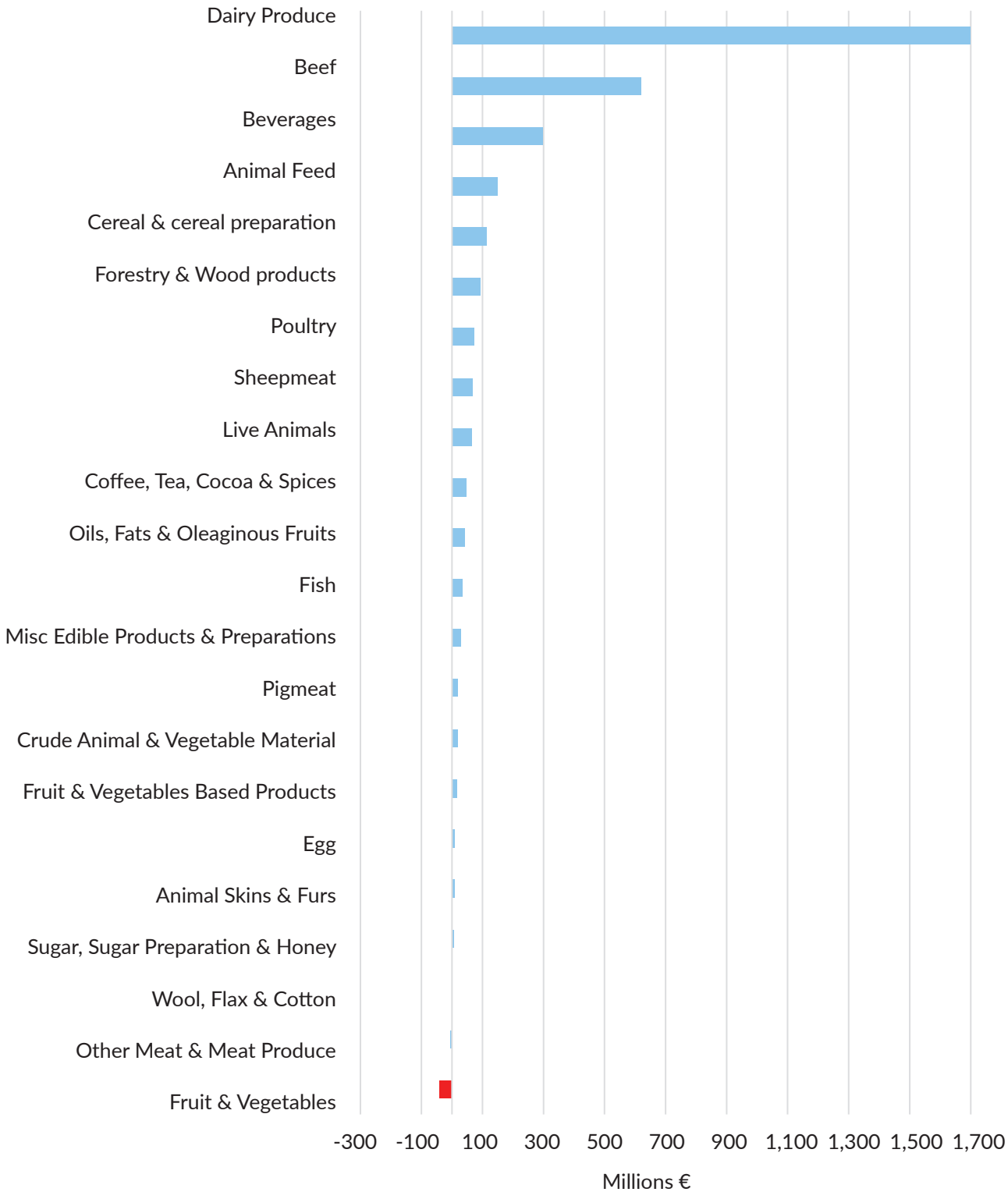
Source: *CSO*

In value terms the top five agri-food exports were dairy produce, beef, beverages, pigmeat and forestry & wood products, each product retaining its ranking on the previous year.

- Dairy exports increased by €1.7 billion to €6.9 billion, up 33%.
- Beef exports increased by €620 million to €3.1 billion, up 25%.
- Beverage exports increased by €297 million to €2.1 billion, up 17%.
- Pigmeat exports increased by €20 million to €954 million, up 2%.
- Forestry & Wood Products exports increased by €66 million to €749 million, up 10%.

These top five agri-food categories by value accounted for 72% of total agri-food sector exports in 2022, with a value of €13.7 billion. The chart below demonstrates the contribution of each product category to the overall agri-food exports total.

Figure 6.3 *Change in Value of Agri-food Sector Exports, 2022 Vs 2021*



Source: *CSO*

The value of agri-food exports increased across 19 of the 22 agri-food product categories. Taken in the context of a 1% increase in export volume, this represents strong performance in growing export value. Overall, Ireland's volume of agri-food exports remained relatively steady at 7.6 million tonnes, though there was variation by category. The volume of Dairy Produce exports accounted for 1.6 million tonnes (-3%), Forestry & Wood Products for 1.5 million tonnes (+4%), Animal Feed for 1.1 million tonnes (-1%), and Beverages for 1 million tonnes (+12%).

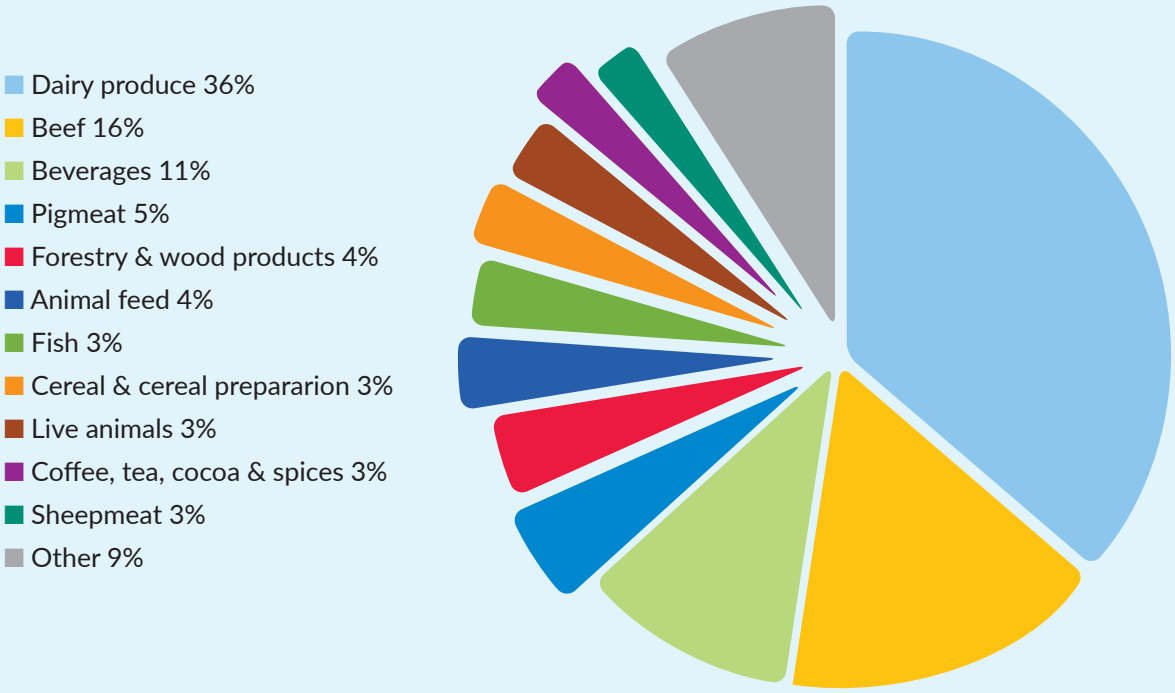
Table 6.1 *Value and Volume of Agri-food Exports by Category, 2021 – 2022*

	Jan-Dec 2021		Jan-Dec 2022			
	Exports		Exports		2022 v 2021	2022 v 2021
Category	€000	Tonnes	€000	Tonnes	% Value Change	% Volume Change
Dairy Produce	5,194,634	1,645,082	6,891,650	1,588,752	33%	-3%
Beef	2,433,114	455,581	3,052,857	491,576	25%	8%
Beverages	1,762,278	872,833	2,059,426	975,479	17%	12%
Pigmeat	936,393	290,947	956,208	285,699	2%	-2%
Forestry & Wood products	690,645	1,490,013	783,715	1,545,544	13%	4%
Animal Feed	547,834	1,094,767	697,513	1,079,378	27%	-1%
Fish	609,233	238,278	642,454	203,329	5%	-15%
Cereal & cereal preparation	506,380	271,560	620,258	283,727	22%	4%
Live Animals	545,364	93,020	611,402	100,712	12%	8%
Coffee, Tea, Cocoa & Spices	440,370	76,766	487,548	76,894	11%	0%
Sheepmeat	386,495	58,264	454,942	66,477	18%	14%
Miscellaneous Edible Products & Preparations	393,881	135,441	424,264	115,828	8%	-14%
Poultry	240,555	95,516	314,056	100,688	31%	5%
Fruit & Vegetables Based Products	181,901	110,217	198,152	110,629	9%	0%
Fruit & Vegetables	220,669	96,520	179,309	96,396	-19%	0%
Oils, Fats & Oleaginous Fruits	114,716	115,311	155,962	119,741	36%	4%
Crude Animal & Vegetable Material	136,517	210,336	154,919	201,528	13%	-4%
Sugar, Sugar Preparation & Honey	123,153	33,799	130,464	29,475	6%	-13%
Animal Skins & Furs	74,013	73,150	82,506	84,557	11%	16%
Egg	37,435	10,421	46,121	10,637	23%	2%
Other Meat & Meat Produce	30,424	5,568	25,973	4,388	-15%	-21%
Wool, Flax & Cotton	7,357	4,261	6,638	4,641	-10%	9%
Grand Total	**15,613,360**	**7,477,650**	**18,976,338**	**7,576,074**	**22%**	**1%**

Source: CSO

The top ten agri-food categories by value (Dairy Produce, Beef, Beverages, Pigmeat, Forestry & Wood products, Animal Feed, Fish, Cereal & cereal preparation, Live Animals and Coffee, Tea, Cocoa & Spices) accounted for 89% of total agri-food sector exports in 2022, totalling €16.8 billion. The remaining 12 categories accounted for 11% of exports at a value of €2.2 billion.

Figure 6.4 *Agri-food Exports by Category, 2022*



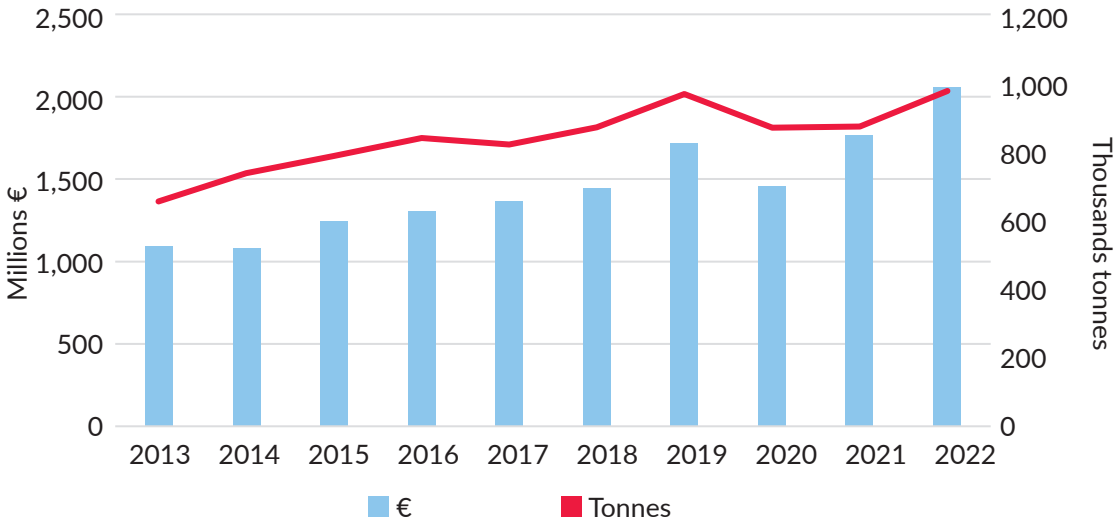
Source: *CSO*

Case Study

Beverages

Beverages exports reached a record high in 2022, exceeding €2 billion for the first time, almost double the value exported a decade ago. This saw growth from €1.1 billion in 2013 to €2.1 billion (+88%) last year. Ireland currently has a trade surplus of €882 million in trade of beverages, with imports of €1.2 billion in 2022. Beverages were exported to over 100 countries globally last year, making up 11% of Ireland's total agri-food exports, the third largest product category. Beverage exports were challenged in 2020 by the closure of the hospitality sector as a result of Covid-19, but they have since bounced back with a €344 million increase on the previous peak in 2019.

Figure 6.5 *Worldwide Beverages Exports 2013-2022*



The top ten destinations by value for Irish beverage exports, were the United States, the United Kingdom, Canada, France, Germany, South Africa, Latvia, the Netherlands, Poland and Italy, which accounted for 80% of beverage exports in 2022. Ireland's largest products within this category are Irish whisky and Irish cream liqueur, valued at €1 billion and €405 million respectively.

The United States was the largest destination for Irish beverage exports in 2022, valued at €829 million, an increase of 26% on 2021. The UK was the second largest destination with €372 million, made up of €243 million to Great Britain and €129 million to Northern Ireland.

Ireland imported €1.2 billion worth of beverages in 2022, an increase of 17% on the previous year. The top three countries from which Ireland imported the most beverages were the United Kingdom (€522 million), France (€143 million) and the Netherlands (€85 million). The three most common imports were flavoured water, beer and wine.

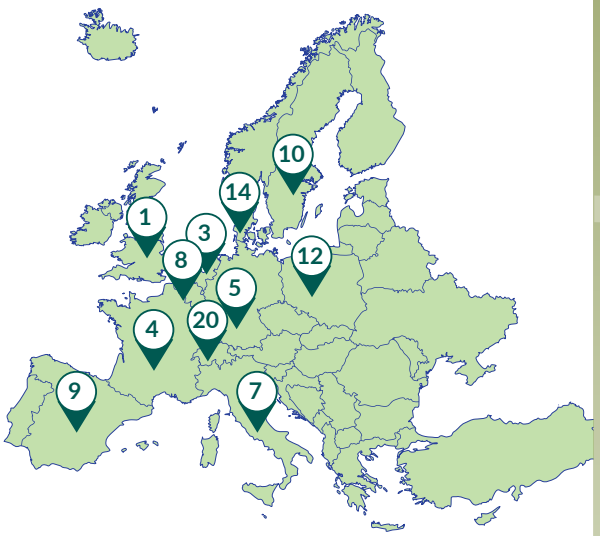
Source: *CSO*

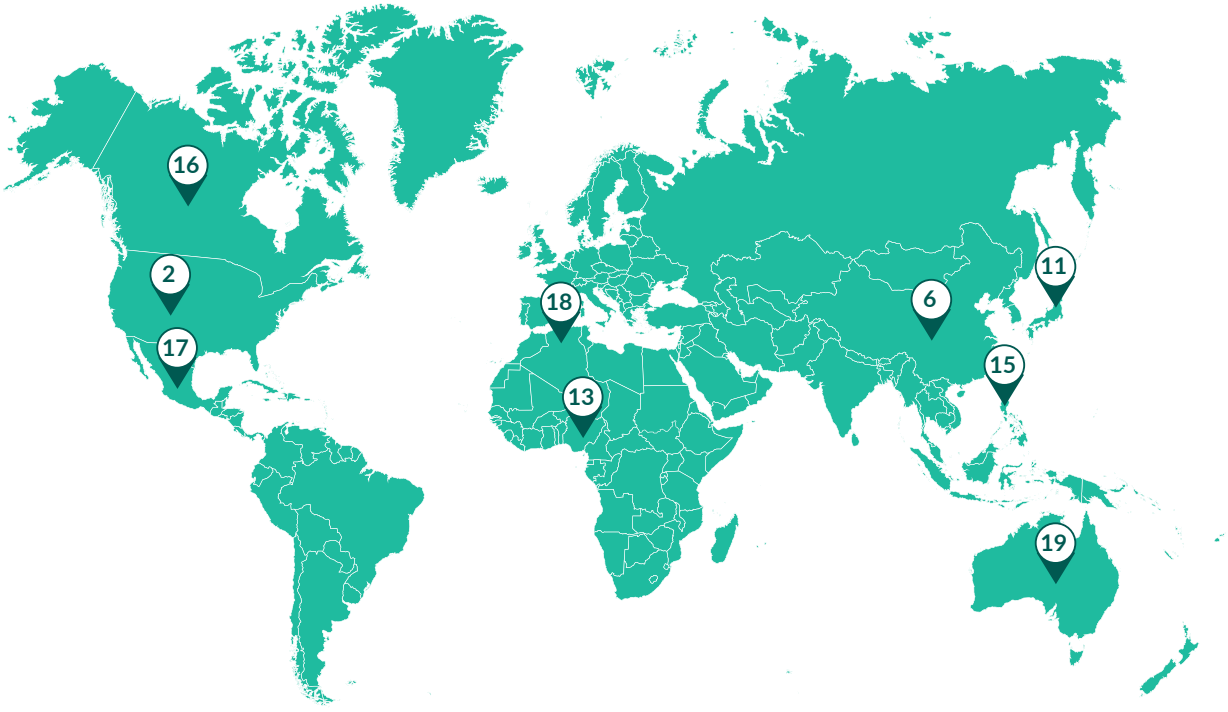
6.3 Agri-food sector trade by destination

Agri-Food sector exports by Top 20 destinations, 2022

The map below highlights the top twenty destinations for Irish agri-food exports globally, demonstrating the distribution between UK (36%), EU (35%) and Rest of World (30%) markets in 2022.

The United Kingdom was Ireland's largest trading partner, with €6.8 billion in agri-food exports in 2022, an increase of 51% over the past decade. This consisted of €4.7 billion and €2 billion in exports to Great Britain and Northern Ireland respectively. The United States was the second largest destination with €1.7 billion in exports, with the Netherlands in third with slightly under €1.7 billion.

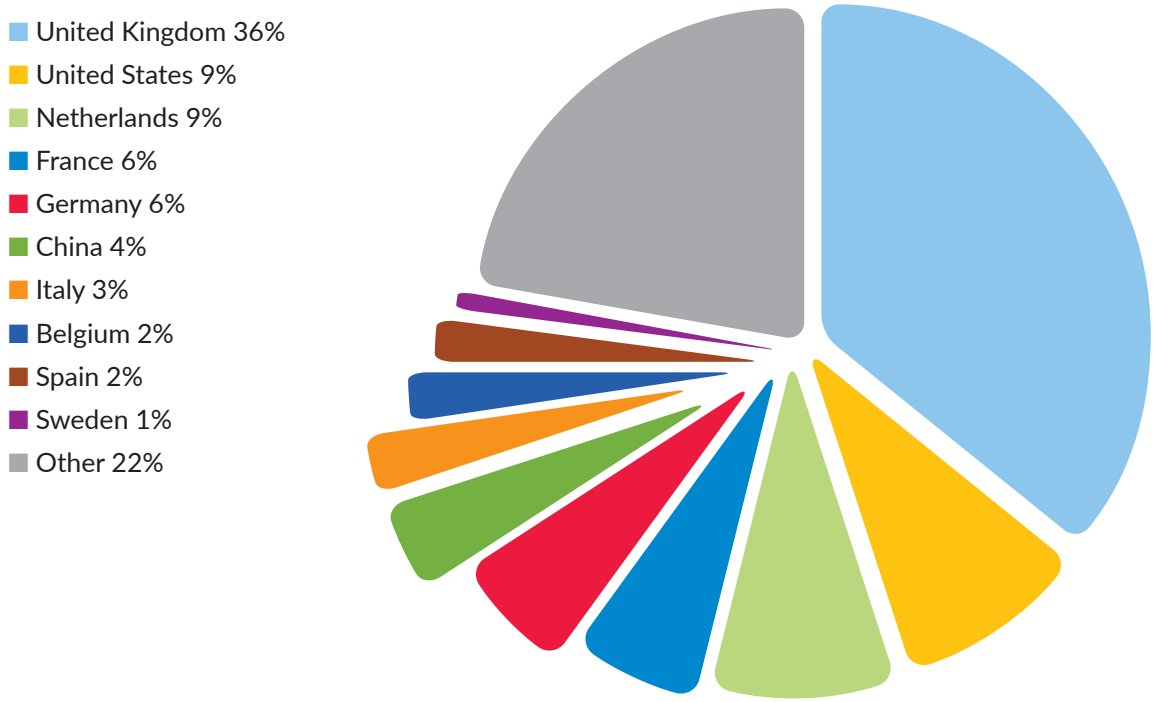




Trade to the top 20 destinations for Irish agri-food was over €16.4 billion in 2022, accounting for 86% of the total.

Exports to Germany exceeded €1 billion for the first time, increasing from €857 million to €1.1 billion (+24%) in 2022.

Figure 6.6 *Top 10 Agri Food Destinations 2022*



Source : *CSO*

Table 6.2 *Value and Volume of Agri-food Exports by Category, 2020 - 2021*

Country	Rank 2021	Rank 2022	Rank Change	2021		2022	
				€000	Tonnes	€000	Tonnes
United Kingdom	1	1	→	5,829,456	4,334,171	6,755,234	4,316,503
United States	2	2	→	1,305,501	260,251	1,733,859	296,307
Netherlands	3	3	→	1,285,996	546,137	1,674,927	471,058
France	4	4	→	886,122	253,024	1,195,189	274,781
Germany	5	5	→	857,486	226,274	1,060,807	250,790
China	6	6	→	783,022	273,908	722,233	221,031
Italy	7	7	→	404,162	103,611	523,151	100,488
Belgium	9	8	↑	278,275	100,546	433,392	181,769
Spain	8	9	↓	304,177	71,270	415,512	85,610
Sweden	11	10	↑	206,726	45,582	238,410	46,920
Japan	12	11	↑	180,728	53,562	213,801	53,810
Poland	14	12	↑	154,196	51,495	213,138	61,076
Nigeria	10	13	↓	211,268	130,890	207,953	92,001
Denmark	13	14	↓	156,840	66,367	181,851	72,211
Philippines	16	15	↑	110,907	53,863	173,430	72,654
Canada	15	16	↓	146,465	30,259	168,930	33,252
Mexico	18	17	↑	103,765	14,942	151,790	15,564
Algeria	30	18	↑	61,947	20,788	117,225	24,712
Australia	19	19	→	96,427	36,087	116,661	44,128
Switzerland	20	20	→	90,150	10,556	111,474	12,083
United Arab Emirates	28	21	↑	64,596	26,064	109,194	29,283
Portugal	39	22	↑	40,356	9,267	101,634	13,271
South Africa	22	23	↓	81,620	30,854	100,524	30,624
Senegal	24	24	→	72,985	34,455	94,689	33,179
Saudi Arabia	17	25	↓	109,602	30,078	94,165	19,787
Top 25 Totals				**13,822,776**	**6,814,302**	**16,909,173**	**6,852,891**

Source: *CSO*

6.4 Key markets for Irish Agri-Food Exports

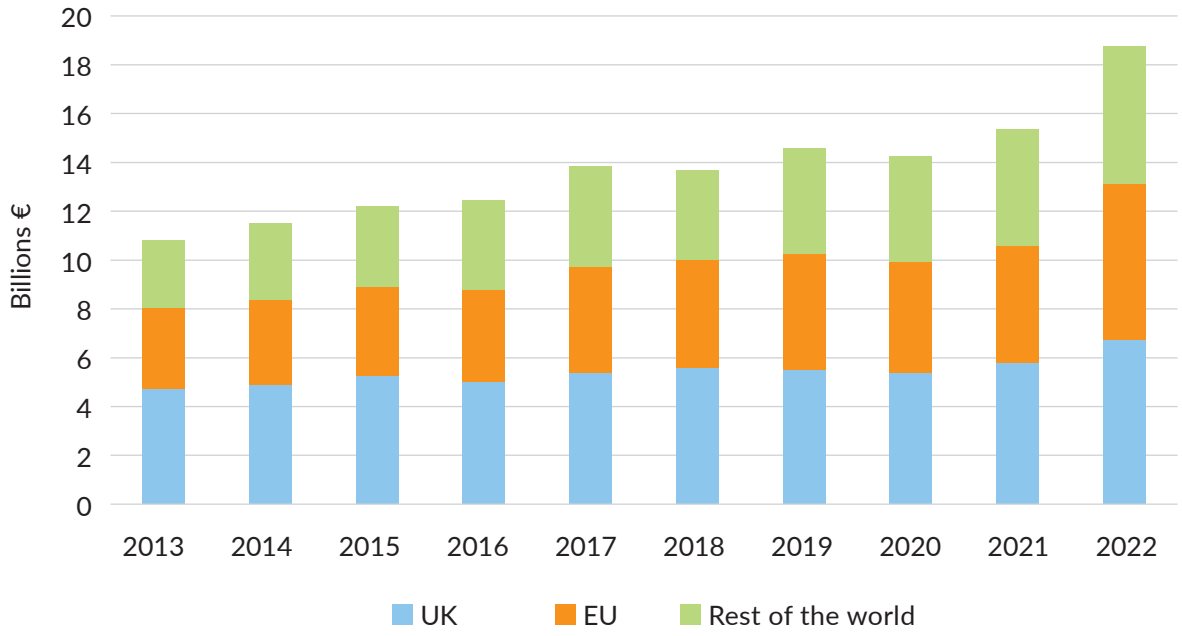
Irish agri-food exports were a record €19 billion in 2022, reaching over 180 destination countries. The United Kingdom was our largest trading partner with €6.8 billion, accounting for 36% agri-food exports in 2022. Exports to EU countries reached €6.6 billion last year, making up 35% of total agri-food exports, while Rest of World countries accounted for the remaining €5.6 billion or 30% of total agri-food exports.

United Kingdom – Number 1

Exports to the United Kingdom were made up of €4.7 billion to Great Britain and €2 billion to Northern Ireland. While exports to the UK have steadily increased in value over the past decade, the proportion of overall exports has been declining as exports to Rest of World countries has increased at a faster rate. In 2013, exports to the UK made up 44% of total agri-food exports, while in 2022, this has dropped to 36%.

With exports of €6.8 billion, and imports totalling €4.6 billion, Ireland has an agri-food trade surplus with the United Kingdom of approximately €2.2 billion in 2022, an increase of 11% on the surplus in 2021.

Figure 6.7 *Agri-food Exports by Region 2013-2022*



Source: *CSO*

Table 6.3 *Agri-food Trade to the United Kingdom by Category 2022*

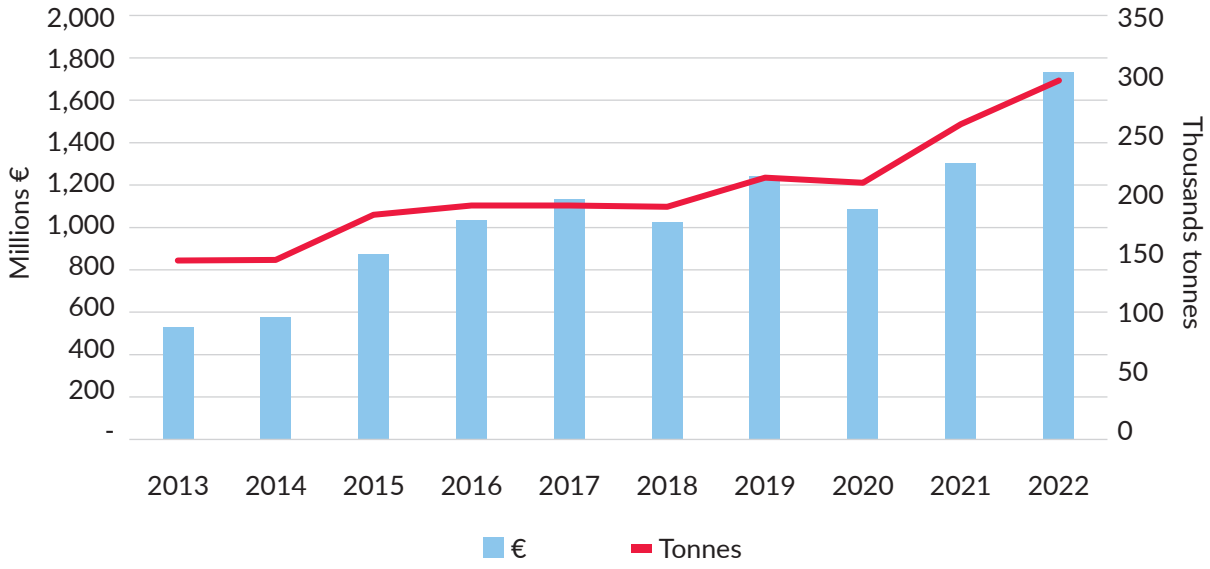
	UK		GB		NI	
	Exports		Exports		Exports	
Category	€000	Tonnes	€000	Tonnes	€000	Tonnes
Beef	1,311,862	211,077	1,079,001	168,915	232,861	42,162
Dairy Produce	1,274,403	459,140	782,025	177,624	492,378	281,516
Forestry & Wood products	618,281	1,266,656	464,275	674,837	154,006	591,819
Cereal & cereal preparation	566,674	265,321	451,547	176,670	115,127	88,651
Animal Feed	456,449	830,081	196,288	178,029	260,161	652,053
Live Animals	417,629	59,887	274,794	4,746	142,835	55,141
Pigmeat	410,712	76,442	306,523	52,980	104,190	23,462
Beverages	372,017	571,582	242,874	375,688	129,143	195,894
Coffee, Tea, Cocoa & Spices	268,545	50,149	233,286	46,012	35,259	4,137
Poultry	245,995	58,866	154,518	39,960	91,478	18,905
Miscellaneous Edible Products & Preparations	235,084	88,318	170,566	57,149	64,518	31,170
Fruit & Vegetables	165,933	91,148	111,822	51,174	54,111	39,974
Fruit & Vegetables Based Products	110,197	103,178	74,158	78,896	36,039	24,282
Fish	58,527	14,139	25,184	5,642	33,343	8,498
Sheepmeat	57,602	10,635	49,456	8,748	8,146	1,887
Crude Animal & Vegetable Material	55,239	98,922	39,672	27,540	15,567	71,383
Oils, Fats & Oleaginous Fruits	41,876	30,009	13,823	7,926	28,053	22,083
Sugar, Sugar Preparation & Honey	35,217	10,294	20,025	3,544	15,192	6,749
Egg	24,243	9,069	19,239	6,275	5,004	2,794
Other Meat & Meat Produce	22,150	3,534	19,372	3,023	2,778	511
Animal Skins & Furs	3,665	4,390	1,401	1,642	2,264	2,748
Wool, Flax & Cotton	2,932	3,664	2,930	3,664	2	0
Grand Total	6,755,234	4,316,503	4,732,779	2,150,684	2,022,455	2,165,819

Source: CSO

United States – Number 2

The United States remained Ireland's second largest destination for Ireland's agri-food exports for 2022. The United States account for €1.7 billion of exports in 2022, an increase of 33% on the previous year. This significant increase in exports was largely due to Dairy Produce and Beverages, which grew by €230 million (+52%) and €172 million (+26%) respectively.

Figure 6.8 *Value of Agri- Food Exports to the United States by Year, 2013-2022*

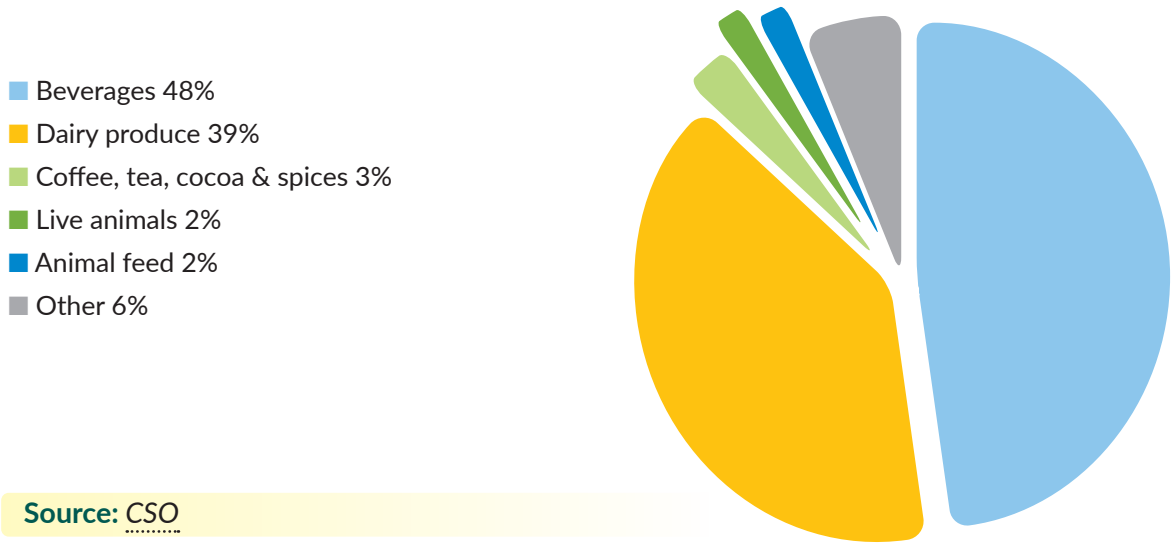


Source: *CSO*

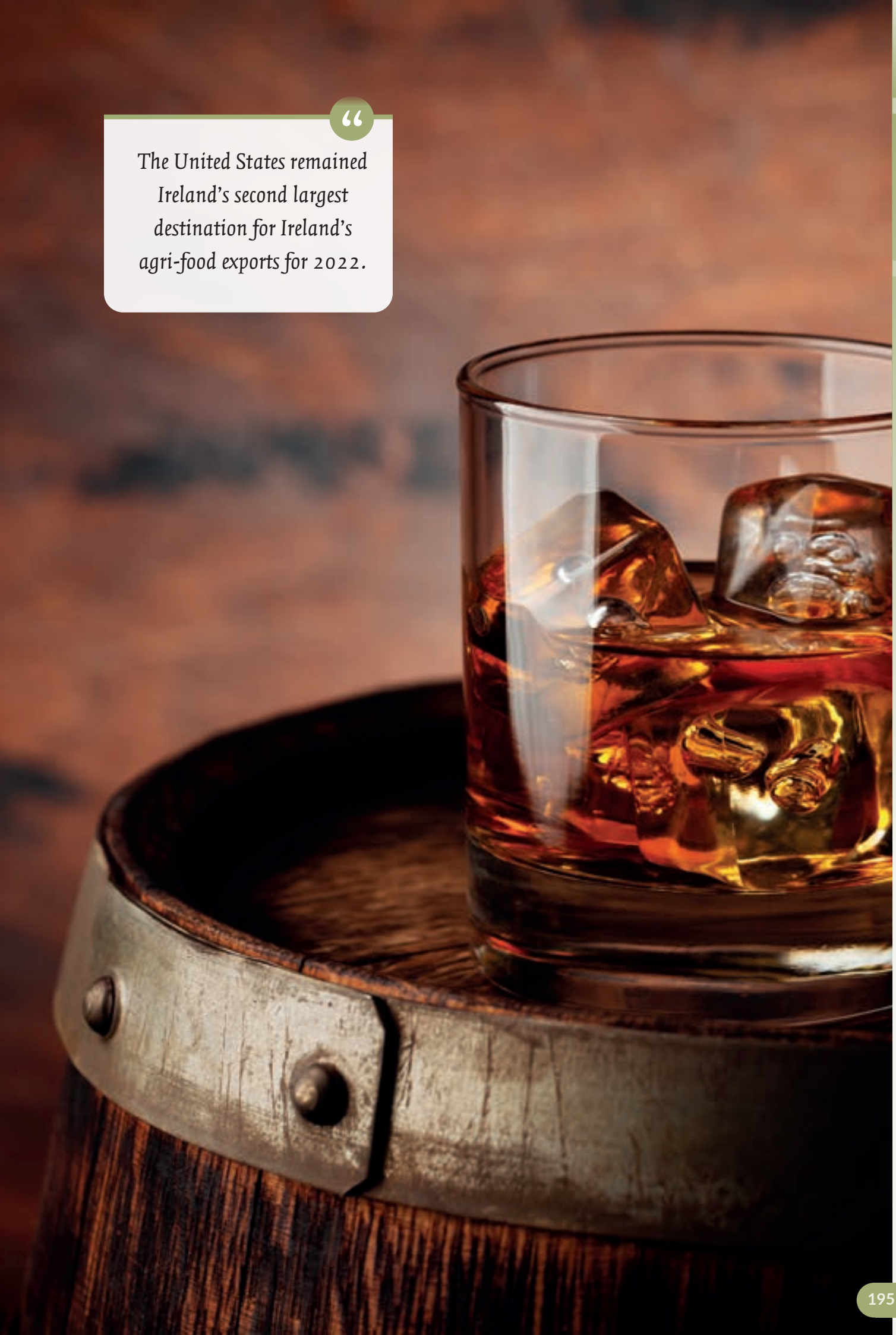
Beverages was the largest category of product exported to the United States, increasing from €657 million to €829 million (+26%) in 2022. This increase of €172 million accounted for 40% of the €428 million increase in agri-food exports overall. Exports of Irish whisky increased from €441 million to €546 million (+24%) over the same period. Irish cream liqueur also increased significantly, from €135 million to €160 million (+18%).

Dairy Produce was the second largest category of exports to the US in 2022, increasing from €446 million to €676 million (+52%) on the previous year. This increase of €230 million accounted for 54% of the total increase in agri-food exports overall. The largest product exported within this category was natural butter, which increased from €192 million to €274 million (+42%).

Figure 6.9 *Agri-Food Exports to the United States by Category 2022*



Source: *CSO*

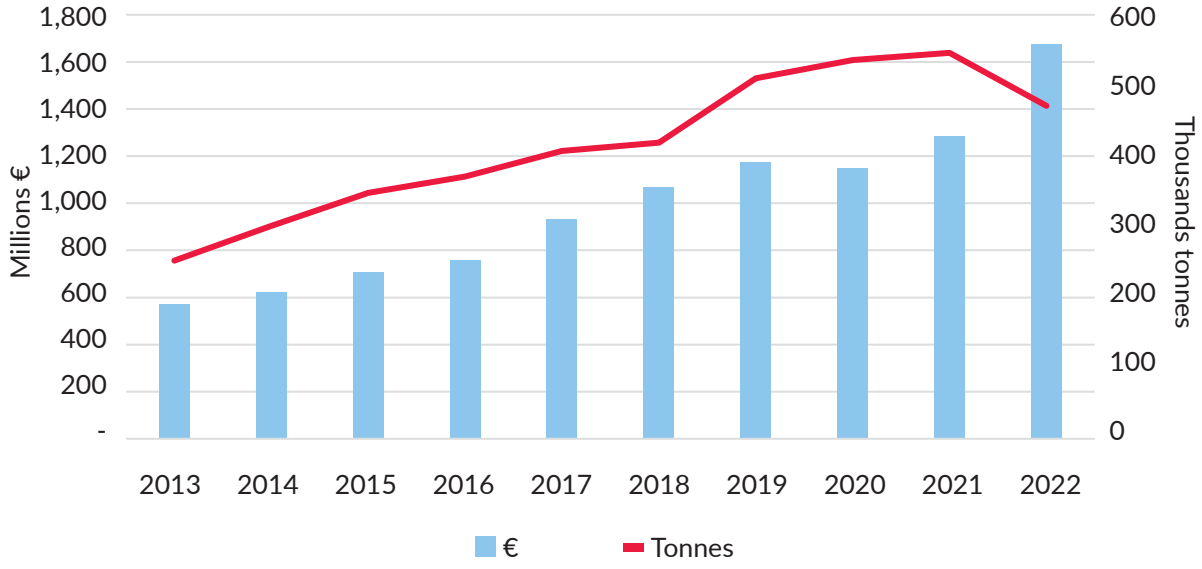


> *The United States remained Ireland's second largest destination for Ireland's agri-food exports for 2022.*

The Netherlands – Number 3

The Netherlands remained Ireland's third largest destination for Irish agri-food exports, totalling €1.7 billion, in 2022. This was an increase of €389 million (+30%) in exports on 2021, with a €283 million increase in dairy produce representing 73% of the overall increase in agri-food exports to the Netherlands.

Figure 6.10 *Value of the Netherlands Agri-food Exports by Year, 2013-2022*

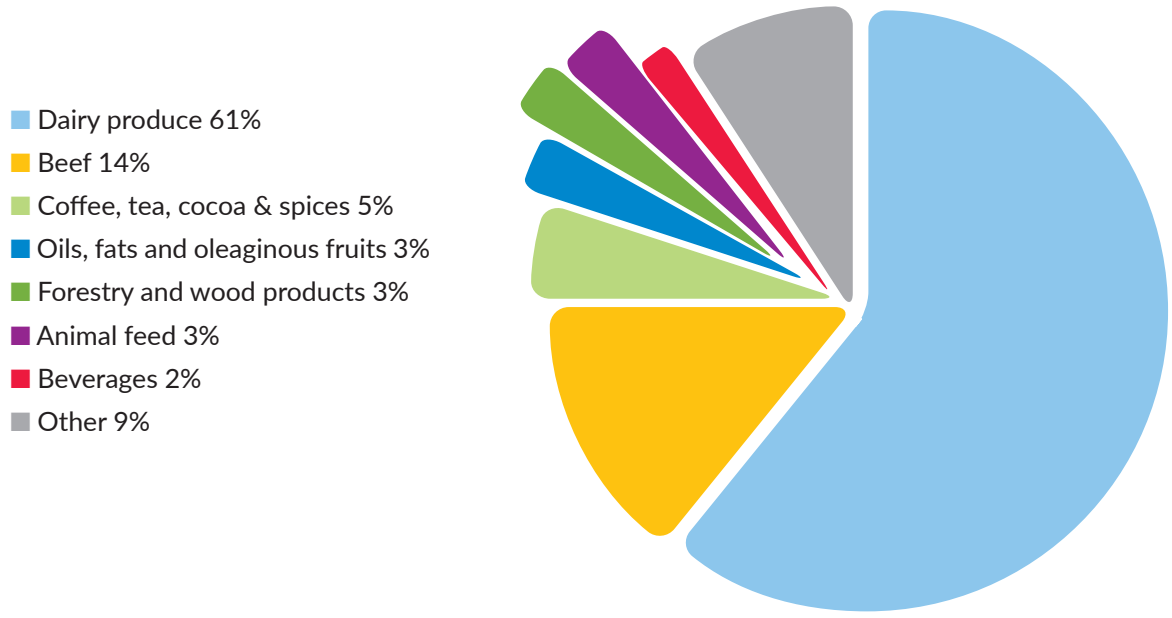


Source: *CSO*

Dairy produce was the largest product category exported to the Netherlands, with an increase from €737 million to over €1 billion (+38%) in 2022. The largest product exported within this category was natural butter, increasing from €310 million to €367 million (+18%) in 2022.

Beef was the second largest product category exported to the Netherlands in 2022, increasing from €207 million to €242 million (+17%). The largest individual product export within this category was 'fresh or chilled bovine meat, boneless', valued at €191 million in 2022.

Figure 6.11 *Agri-Food Exports to the Netherlands by Category 2022*



Source: *CSO*

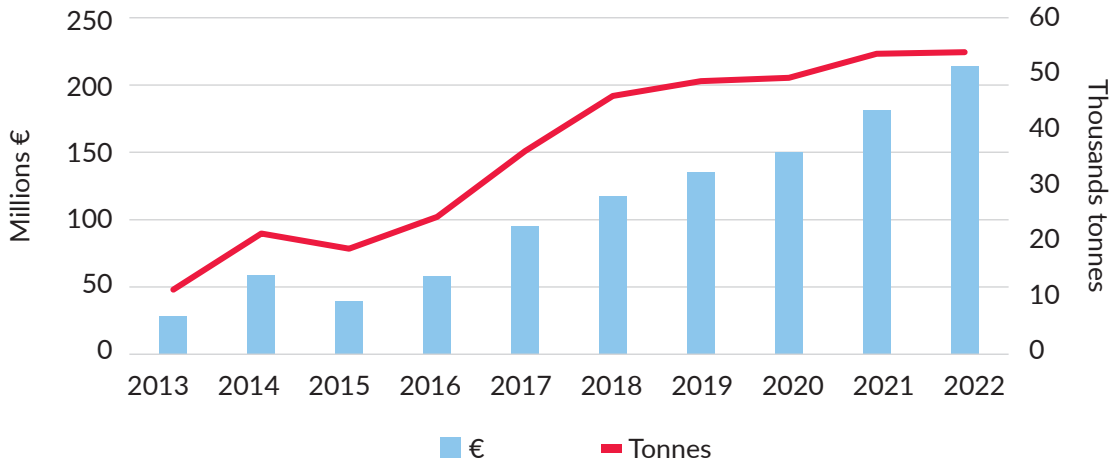
Case Study

Japan

Japan is the world's third largest economy and a regional leader in Asia, with an affluent population of 123 million people. It faces significant demographic challenges with 30% of the population aged 65 or older, and its population is predicted to decline from 123 million to 104 million by 2050. Economic ties between Ireland and Japan are strong due to Ireland's membership of the EU, and the ongoing implementation of the EU-Japan Economic Partnership Agreement.

Japan is 35% to 40% self-sufficient in food. It is one of the largest importers of agri-food products globally and is the second largest meat importing country in the world. Irish Agri-food exports to Japan were up 18% to €214 million for 2022.

Figure 6.12 *Agri-Food Exports to Japan, Value & Volume, 2013 -2022*



The profile of Irish agri-food exports by value is 42% dairy, 26% pigmeat, 14% beef, 8% fish and 5% beverages.

Dairy exports rose 30% to €90 million for 2022, consisting of 80% cheddar cheese - shredded for pizzas or for the production of processed cheeses. This is an important outlet as it reduces Ireland's reliance on the UK, the traditional export market for Irish cheddar.

Pigmeat exports were up 12% to €56.5 million (9% in volume). Shipping time from Ireland takes 6 to 9 weeks so this is frozen bacon/pork and frozen ground pork. This is used in the restaurant trade or for incorporation into retail products.

Beef exports for 2022 increased in value by 10% to €30 million and are roughly half beef offal and half frozen beef. About €150,000 of fresh beef is flown in and mainly sold in high-end expat restaurants or through on-line retailers like Rakuten.

Beverage exports increased 27% to €11 million, continuing their post-pandemic recovery. The breakdown is approximately 40% whiskey, 40% liqueurs and 20% beers, with whiskey exports doubling year-on-year. Whiskey is an area for Irish expansion as Japan currently imports over €250 million of Scotch.

Fish exports rose to 8% to €18 million, exceeding pre-Pandemic levels. This consists mainly of mackerel imported for use in restaurants and retail, with some small amounts of shellfish.

Ireland had agri-food imports from Japan in 2022 of €4.4 million, up from €3.3 million in 2021. This comprises beverages, timber products and Japanese sauces and pastes.

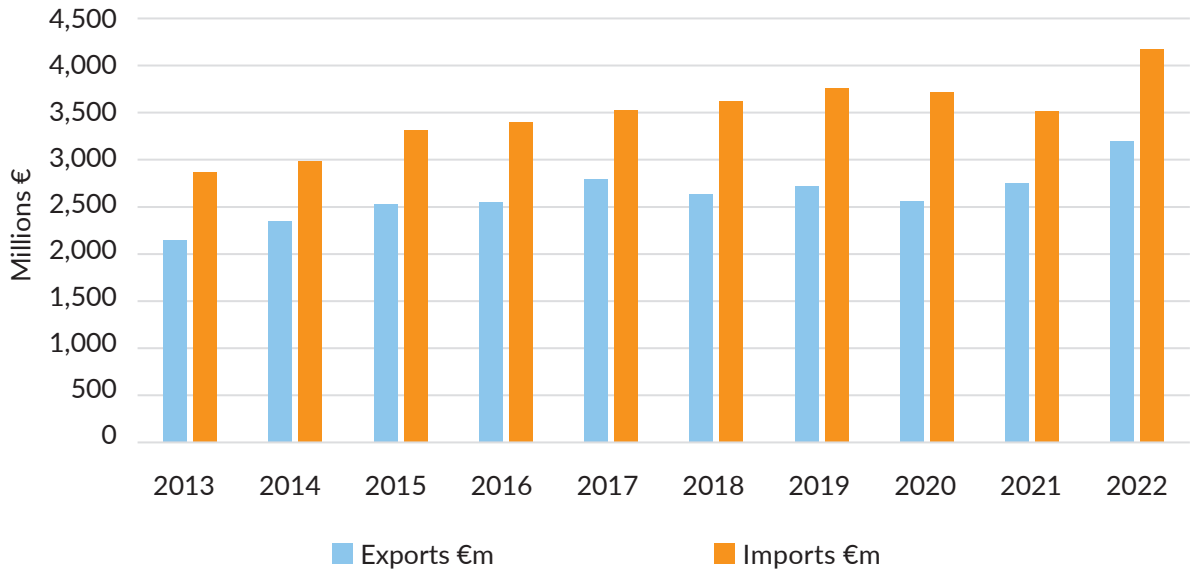
Source: *United Nations ESCAP, U.S. Department of Agriculture and CSO*

6.5 Prepared Consumer Foods

Prepared Consumer Foods (PCF) are value-added food and beverage products, which sell both domestically and internationally to retail, food service or other food companies. These goods are categorised into 15 areas identified and agreed by industry stakeholders, the Department of Agriculture, Food and the Marine and the Central Statistics Office.

Exports in the PCF sector broke the €3 billion mark for the first time in 2022 with a total of €3.2 billion. Ireland imported €4.2 billion worth of PCF products, resulting in a trade deficit of €1 billion, a 28% increase on the previous year.

Figure 6.13 *Global PCF Exports & Imports by Value, 2013-2022*



Source: CSO

The export value of all PCF product categories increased in 2022, with the total growing from €2.8 billion to €3.2 billion (+16%). Meat preparations was the largest category of export overall, increasing from €901 million to €1.1 billion (+19%) in 2022. Cereal-based products saw the largest percentage increase, growing from €99 million to €134 million (+35%).

While no product saw a decrease in export value, there were notable decreases in the volume of other food preparations and dairy preparations, which decreased by 20,000 tonnes (-20%) and 3,300 tonnes (-10%) respectively.

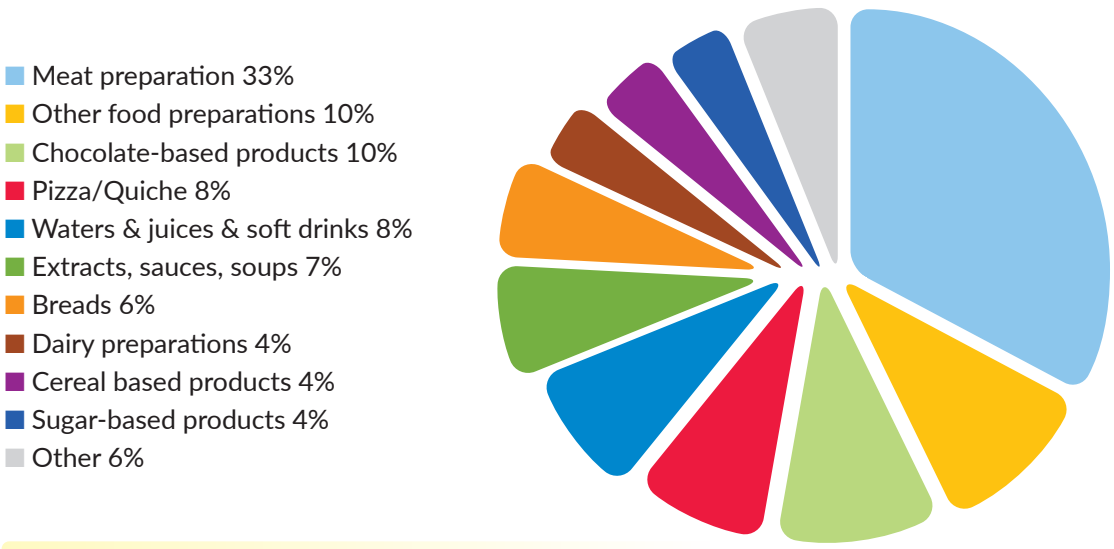
The top five Prepared Consumer Food categories are meat preparations, other food preparations, chocolate-based products, pizza/quiche and waters & juices & soft drinks, accounting for €2.2 billion or 69% of total exports by value in 2022.

Table 6.4 *Prepared Consumer Food Exports by Category, 2021-2022*

	2021 Exports		2022 Exports			
Category	€000	Tonnes	€000	Tonnes	% Value Change	% Volume Change
Meat Preparations	900,565	149,792	1,065,984	160,816	18%	7%
Other Food Preparations	308,492	102,834	331,469	82,756	7%	-20%
Chocolate-based products	309,816	65,356	326,402	63,759	5%	-2%
Pizza/Quiche	193,777	85,745	240,203	88,178	24%	3%
Waters & Juices & Soft Drinks	212,466	245,599	237,025	272,937	12%	11%
Extracts, Sauces, Soups	178,236	24,810	214,879	26,270	21%	6%
Breads	163,237	77,349	202,123	81,459	24%	5%
Dairy Preparations	108,925	33,623	135,892	30,306	25%	-10%
Cereal based Products	99,416	131,828	133,584	151,590	34%	15%
Sugar-based products	108,154	34,015	120,520	32,414	11%	-5%
Fruit & Vegetable based	68,023	30,350	71,688	32,552	5%	7%
Fruit-based bakery	66,270	19,212	71,004	20,110	7%	5%
Frozen Confectionery	17,957	7,091	23,465	7,755	31%	9%
Biscuits	13,025	3,689	14,223	3,658	9%	-1%
Savoury Snacks etc	6,110	2,651	6,657	2,555	9%	-4%
Grand Total	2,754,468	1,013,943	3,195,117	1,057,116	16%	4%

Source: CSO

Figure 6.14 *Prepared Consumer Food Exports by Category 2022*



Source: CSO

6.6 Key markets for Irish PCF Exports

The United Kingdom was the largest destination for Irish PCF exports in 2022, valued at €2 billion and accounting for 63% of total PCF exports. This was made up of €1.5 billion worth of exports to Great Britain and €503 million to Northern Ireland. Other significant markets included the Netherlands (5%), France (4%), Germany (4%), the United States (3%), Spain (3%) and Italy (3%).

Table 6.5 *Prepared Consumer Food Trade with United Kingdom 2022*

	UK		GB		NI	
	€000		€000		€000	
Category	Exports	Imports	Exports	Imports	Exports	Imports
Meat Preparations	633,288	135,515	480,230	92,977	153,058	42,538
Chocolate-based products	242,155	221,471	217,652	213,013	24,503	8,458
Pizza/Quiche	229,808	71,626	217,063	51,276	12,745	20,349
Breads	185,575	69,104	140,841	48,490	44,734	20,614
Other Food Preparations	151,309	169,516	119,745	151,358	31,564	18,158
Waters & Juices & Soft Drinks	126,606	280,475	79,609	94,670	46,997	185,805
Cereal based Products	115,534	272,234	69,427	210,292	46,107	61,942
Extracts, Sauces, Soups	74,670	202,899	40,248	185,667	34,422	17,232
Fruit-based bakery	62,598	55,401	52,078	44,231	10,520	11,170
Fruit & Vegetable based	59,114	164,847	24,668	129,908	34,446	34,939
Dairy Preparations	52,989	38,206	22,138	35,609	30,851	2,597
Sugar-based products	36,318	90,079	20,432	79,519	15,886	10,560
Frozen Confectionery	14,521	26,928	5,174	22,606	9,347	4,322
Biscuits	11,079	101,601	5,539	91,224	5,539	10,377
Savoury Snacks etc	6,608	29,451	4,702	22,216	1,907	7,235
Grand Total	2,003,030	1,929,353	1,500,403	1,473,056	502,627	456,297

Prepared Consumer Food by Top 20 Destination Countries, 2022

Ireland's exports of Prepared Consumer Foods (PCF) products is concentrated among the top 20 countries, accounting for 95% of the total.

Among the top five destinations, significant increases in export values were seen in the UK (+13%), the Netherlands (+19%), France (+23%) and the United States (+26%).

Germany saw a decrease of 7% in the export of PCF products in 2022.

1	United Kingdom	€ 2,003 million
2	Netherlands	€ 167 million
3	France	€ 134 million
4	Germany	€ 132 million
5	United States	€ 106 million
6	Spain	€ 101 million
7	Italy	€ 90 million
8	Belgium	€ 61 million
9	Sweden	€ 37 million
10	Denmark	€ 35 million

11	Romania	€ 23 million
12	Poland	€ 21 million
13	Portugal	€ 21 million
14	Canada	€ 17 million
15	China	€ 16 million
16	Kazakhstan	€ 16 million
17	Japan	€ 14 million
18	Croatia	€ 11 million
19	Finland	€ 11 million
20	South Korea	€ 10 million

Table 6.6 *Value and Volume of PCF Exports by Top 20 Destinations, 2021 - 2022*

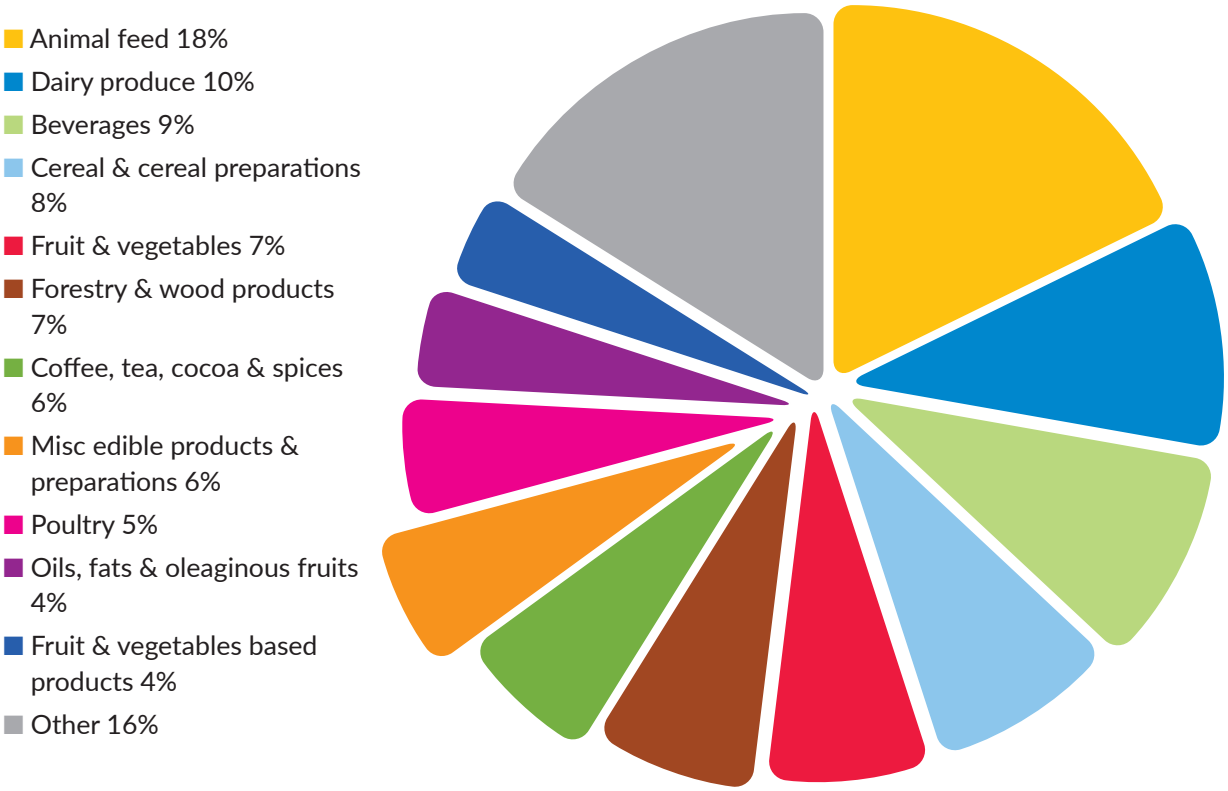
Country	Rank 2021	Rank 2022	Rank Change	2021		2022	
				€000	Tonnes	€000	Tonnes
United Kingdom	1	1	→	1,776,404	833,521	2,003,030	846,028
Netherlands	3	2	↑	140,020	18,672	167,196	20,086
France	4	3	↑	109,376	16,249	134,001	20,809
Germany	2	4	↓	142,739	21,249	132,483	18,625
United States	5	5	→	84,193	19,088	106,363	23,274
Spain	6	6	→	82,532	10,484	101,541	12,163
Italy	7	7	→	79,200	14,214	90,962	12,247
Belgium	8	8	→	34,208	4,864	61,412	7,586
Sweden	9	9	→	29,486	4,551	37,303	5,389
Denmark	10	10	→	24,536	11,095	35,044	11,949
Romania	12	11	↑	19,577	6,050	23,052	7,535
Poland	11	12	↓	23,438	5,742	21,787	5,272
Portugal	18	13	↑	10,328	1,440	21,474	3,212
Canada	16	14	↑	10,608	2,668	17,736	4,709
China	14	15	↓	11,272	1,423	16,820	1,735
Kazakhstan	24	16	↑	6,145	371	16,514	402
Japan	17	17	→	10,546	3,221	14,635	4,567
Croatia	21	18	↑	7,887	5,464	11,894	6,922
Finland	15	19	↓	11,447	1,567	11,519	1,393
South Korea	19	20	↓	9,836	1,270	10,351	1,480
Top 20 Grand Total				**2,623,778**	**983,202**	**3,035,116**	**1,015,385**

Source: CSO

6.7 Agri- Food Imports

Agri-food sector imports accounted for 9% of Ireland's total imports in 2022. Over the period 2013-2022, imports have increased from €7.6 billion to €12.6 billion (+66%). This represented the highest value of imports ever, an increase of 23% on the previous high of €10.25 billion in 2020 and up 26% on the 2021 value of €10.02 billion. The top five agri-food categories by value accounted for 53% of total agri-food sector imports in 2022, totalling over €6.6 billion.

Figure 6.15 *Agri-food Imports by Category, 2022*



Source: *CSO*

The significant increase in the value of agri-food imports over the past year was largely attributable to:

- Animal feed imports increased by €732 million (+47%) to €2.3 billion.
- Dairy produce imports increased by €325 million (+37%) to €1.2 billion.
- Oils, fats and oleaginous fruits imports increased by €192 million (+54%) to €545 million.
- Cereals & cereal preparations imports increased by €186 million (+22%) to €1.0 billion.
- Beverages imports increased by €172 million (+17%) to €1.2 billion.
- Poultry imports increased by €171 million (+45%) to €555 million.

There was a decrease in the value of only one agri-food import product category. Live animal imports decreased by €3 million (-1%) to €325 million in 2022.

Given the volatility in prices over the past year, the significant increase in the value (26%) of agri-food imports should be considered in the context of the more modest increase in import volumes (8%) Table 6.7 below.

Table 6.7 *Value and Volume of Agri-food Imports by Category, 2021-2022*

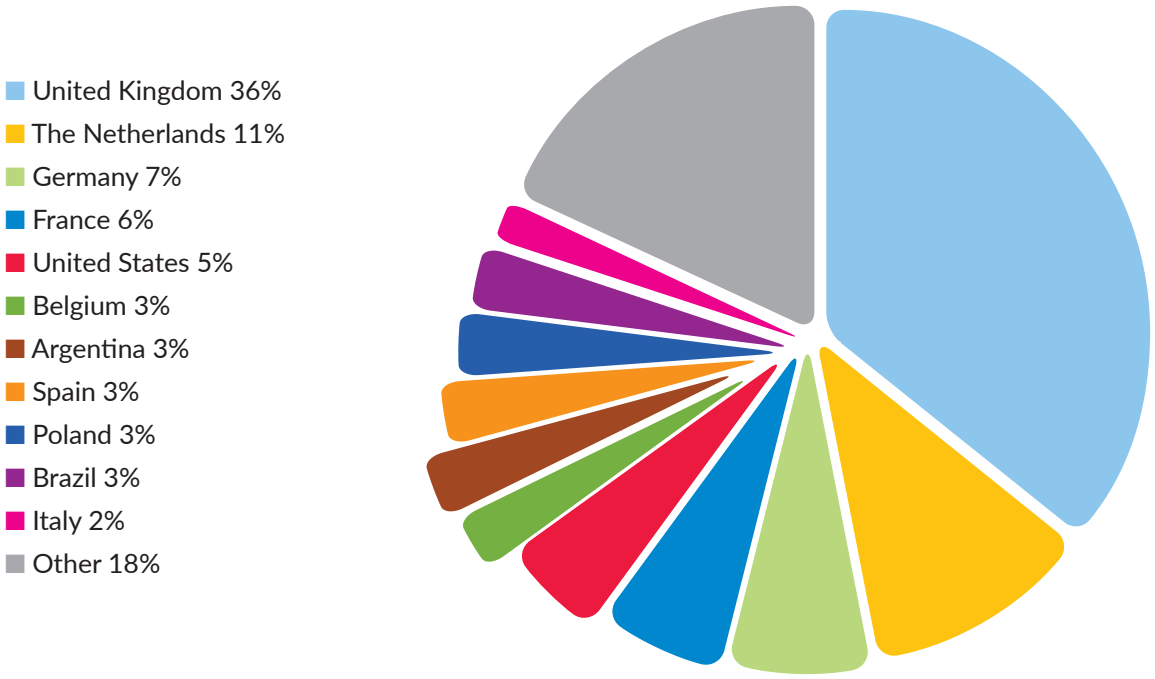
	2021		2022		2021 v 2022	
Category	**€000**	**Tonnes**	**€000**	**Tonnes**	**€000**	**Tonnes**
Animal Feed	1,574,361	5,152,202	2,306,685	5,940,422	47%	15%
Dairy Produce	878,456	848,530	1,203,746	948,931	37%	12%
Beverages	1,005,362	990,489	1,177,102	1,000,081	17%	1%
Cereal & cereal preparation	850,834	592,232	1,036,735	670,608	22%	13%
Fruit & Vegetables	824,727	701,460	918,305	705,125	11%	1%
Forestry & Wood products	738,783	1,107,505	866,058	896,556	17%	-19%
Coffee, Tea, Cocoa & Spices	607,154	109,719	704,390	122,086	16%	11%
Miscellaneous Edible Products & Preparations	583,492	209,081	699,932	228,920	20%	9%
Poultry	383,501	114,343	554,543	139,760	45%	22%
Oils, Fats & Oleaginous Fruits	353,380	322,837	544,970	341,464	54%	6%
Fruit & Vegetables Based Products	445,092	300,194	544,450	324,490	22%	8%
Sugar, Sugar Preparation & Honey	322,929	321,364	389,688	350,281	21%	9%
Pigmeat	303,833	82,481	333,192	85,402	10%	4%
Crude Animal & Vegetable Material	300,702	213,984	331,113	216,112	10%	1%
Live Animals	328,212	14,058	324,791	12,919	-1%	-8%
Fish	268,820	93,191	311,505	71,397	16%	-23%
Beef	158,234	35,071	188,622	36,864	19%	5%
Sheepmeat	43,544	6,528	58,676	9,054	35%	39%
Egg	19,081	6,154	40,731	16,597	113%	170%
Wool, Flax & Cotton	18,056	3,862	24,330	4,800	35%	24%
Other Meat & Meat Produce	8,825	4,744	13,209	4,520	50%	-5%
Animal Skins & Furs	3,128	182	4,180	795	34%	338%
Grand Total	**10,020,508**	**11,230,209**	**12,576,953**	**12,127,184**	**26%**	**8%**

Source: *CSO*

6.8 Agri-Food Imports by Country

In 2022, agri-food goods were imported into Ireland from over 180 countries worldwide. Ireland's top five import countries were the United Kingdom, the Netherlands, Germany, France and the United States, which accounted for 65% or €8.2 billion of Ireland's total imports for the year.

Figure 6.16 *Top 10 Agri-Food Imports by Country 2022*



Source: CSO

The United Kingdom is Ireland's largest import partner, accounting for 36% of agri-food imports and a total value of €4.6 billion in 2022. This was made up of imports of €2.7 billion from Great Britain and €1.9 billion from Northern Ireland. Imports of €4.6 billion from the UK represents an increase of €709 million (+18%) on 2021.

Dairy Produce was the largest product category imported into Ireland from the UK in 2022, valued at €676 million. This represented an increase of €206 million (+44%) on the previous year. Cereal and cereal preparations was the second largest product category, increasing by €73 million (+14%) to €608 million.

Ireland imported agri-food to the value of €1.4 billion from the Netherlands in 2022, our second largest imports market, an increase of €230 million (+20%) on the previous year. The largest product category from the Netherlands was oils, fats, and oleaginous fruits, which increased by €54 million (+38%) to €198 million last year. This was followed by poultry, of which imports increased by €45 million (+40%) to €157 million.

Germany, as the third largest source of imports, accounted for €902 million or 7% of Ireland's total agri-food imports. The largest product category imported from Germany was dairy produce, which increased by €73 million (+82%) to €162 million in 2022. The second largest product category imported was fruit and vegetables, which were valued at €129 million last year.

Table 6.8 *Value and Volume of Agri-food Imports by Top 20 Locations, 2021 - 2022*

	2021		2022		2021 v 2022	
Category	**€000**	**Tonnes**	**€000**	**Tonnes**	**€000**	**Tonnes**
United Kingdom	3,859,986	3,683,704	4,568,583	3,989,590	18%	8%
Netherlands	1,148,726	861,906	1,379,159	842,026	20%	-2%
Germany	657,737	444,242	902,244	460,646	37%	4%
France	574,000	713,979	714,050	754,091	24%	6%
United States	418,324	833,711	617,828	1,048,242	48%	26%
Belgium	311,217	288,611	406,430	299,300	31%	4%
Argentina	236,599	725,181	393,700	964,913	66%	33%
Spain	303,854	239,708	361,082	234,206	19%	-2%
Poland	254,303	224,870	360,899	203,732	42%	-9%
Brazil	125,355	275,642	296,755	572,692	137%	108%
Italy	228,221	123,977	267,631	132,139	17%	7%
Canada	184,868	624,739	240,805	647,527	30%	4%
China	160,070	59,846	220,777	64,655	38%	8%
Denmark	137,813	130,782	134,915	112,262	-2%	-14%
Malaysia	89,981	93,265	115,919	65,729	29%	-30%
Thailand	57,474	20,807	93,318	22,628	62%	9%
India	60,309	91,183	74,783	51,504	24%	-44%
Austria	55,427	20,002	72,933	34,889	32%	74%
Switzerland	56,323	9,278	72,513	14,742	29%	59%
Chile	58,240	23,526	72,334	25,257	24%	7%
Top 20 Total	**8,978,828**	**9,488,959**	**11,366,659**	**10,540,771**	**27%**	**11%**

Source: CSO

6.9 Prepared Consumer Food Imports

Prepared Consumer Foods (PCF) imports reached a record €4.2 billion in 2022, an increase of 19% on the previous year. Meat preparations accounted for €542 million (13%) of PCF imports, while waters, juices and soft drinks accounted for €505 million (12%), cereal-based products €472 million (11%), and fruit and vegetable-based products €465 million (11%).

The product categories that saw the largest increases in value imported between 2021 and 2022 were:

- Meat preparations, which increased by €111 million (+26%) to €542 million.
- Water, juices and soft drinks, which increased by €106 million (+27%) to €505 million.
- Cereal-based products, which increased by €106 million (+29%) to €472 million.

One product category of PCF imports decreased by value last year; frozen confectionery decreased by €7 million (-11%) to €56 million in 2022. This should be considered in the context of rising prices across most product categories, and that several product categories did see a fall in volume as detailed below.

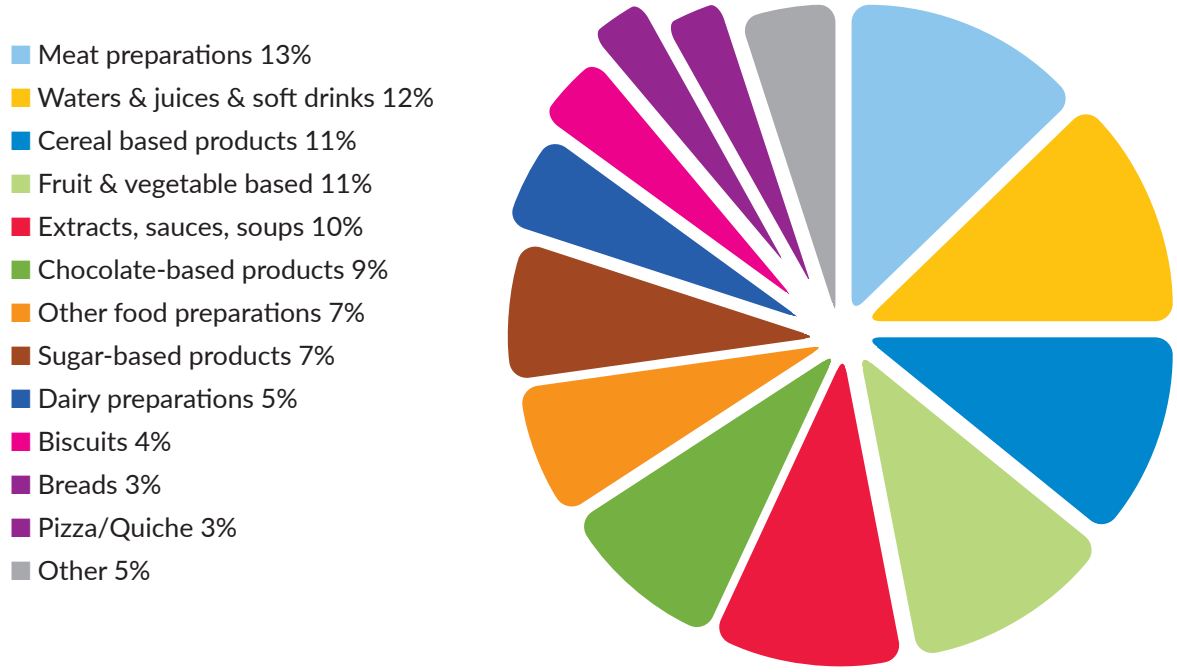
Table 6.9 *Value and Volume of Prepared Consumer Food Imports by Category, 2021 - 2022*

	2021		2022		2021 v 2022	
Category	**€000**	**Tonnes**	**€000**	**Tonnes**	**€000**	**Tonnes**
Meat Preparations	431,164	92,681	542,446	99,145	26%	7%
Waters & Juices & Soft Drinks	398,421	525,952	504,564	550,694	27%	5%
Cereal based Products	366,812	360,926	472,434	432,260	29%	20%
Fruit & Vegetable based	387,116	254,689	464,818	283,798	20%	11%
Extracts, Sauces, Soups	362,276	114,354	434,219	118,768	20%	4%
Chocolate-based products	330,759	63,941	359,803	70,267	9%	10%
Other Food Preparations	298,192	84,930	300,404	71,471	1%	-16%
Sugar-based products	229,189	371,351	272,604	382,937	19%	3%
Dairy Preparations	165,216	88,572	208,131	72,593	26%	-18%
Biscuits	136,261	47,626	161,864	53,818	19%	13%
Breads	125,722	61,620	136,983	52,408	9%	-15%
Pizza/Quiche	96,600	28,584	122,828	33,714	27%	18%
Fruit-based bakery	87,050	25,145	94,539	24,363	9%	-3%
Frozen Confectionery	62,757	24,261	55,930	20,419	-11%	-16%
Savoury Snacks etc	37,781	9,156	39,914	8,879	6%	-3%
Grand Total	**3,515,315**	**2,153,788**	**4,171,481**	**2,275,533**	**19%**	**6%**

Source: CSO

The top five Prepared Consumer Food categories accounted for 58% of total PCF imports in 2022 and totalled €2.4 billion.

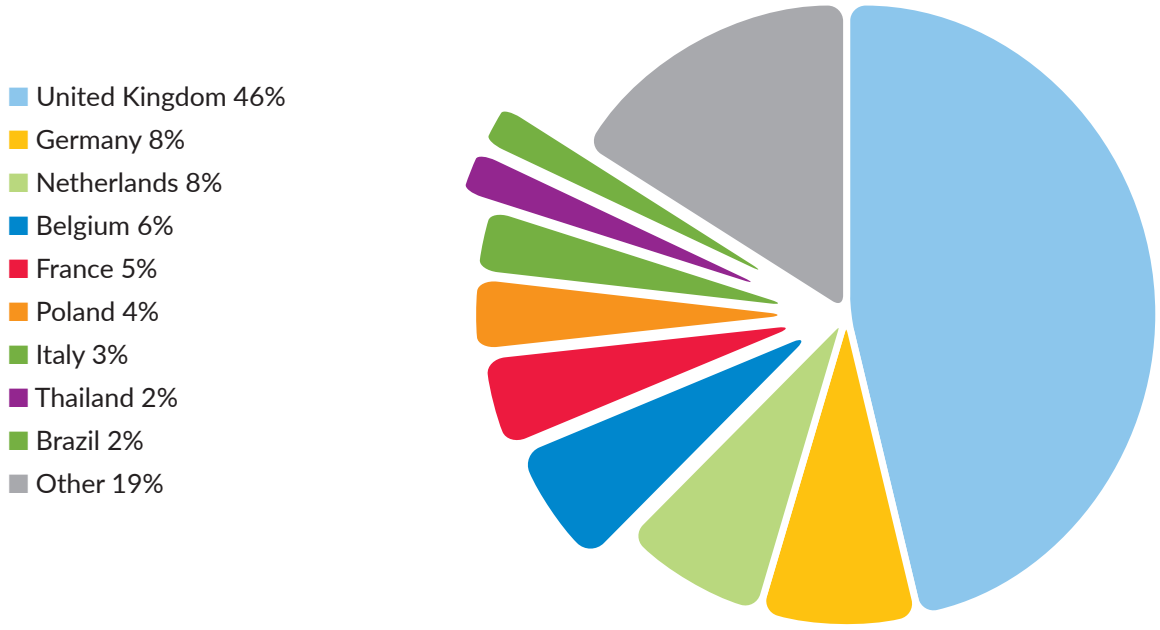
Figure 6.17 *Prepared Consumer Food Imports by Category, 2022*



Source: *CSO*

The United Kingdom was Ireland's largest trading partner, accounting for 46% of total PCF imports in 2022. Other significant trading partners include Germany (8%), the Netherlands (8%), Belgium (6%) and France (5%).

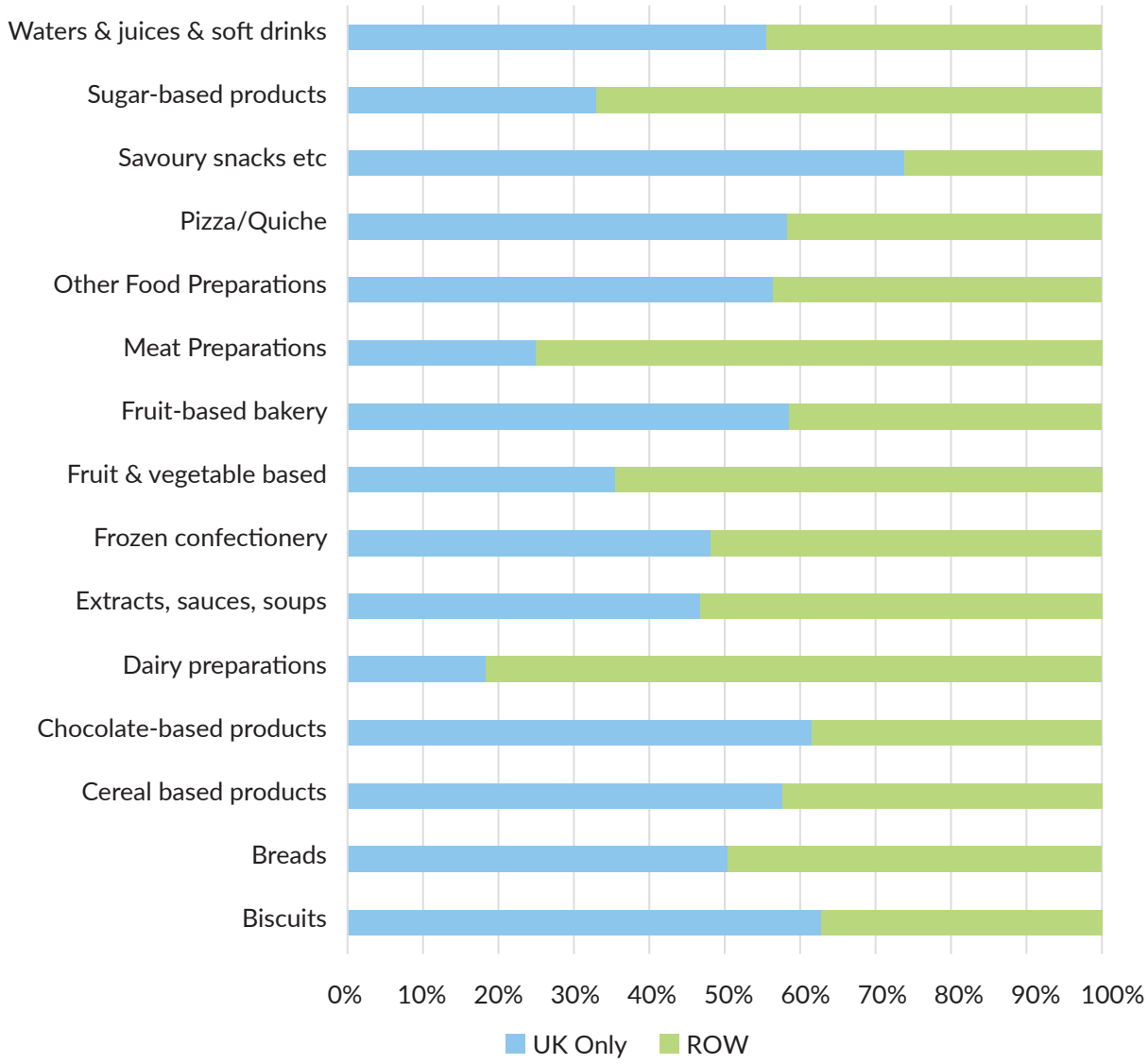
Figure 6.18 *Prepared Consumer Food Imports by Country of Origin, 2022*



Source: *CSO*

Prepared Consumer Food imports from the United Kingdom accounted for 46% of total PCF imports in 2022. Categories of imported PCF products with a strong dependency on the UK market include 74% of savour snacks, 63% of biscuits and 62% of chocolate-based products. Figure 6.21 provides a detailed analysis of each category by percentage imported from the United Kingdom and from the rest of the world (ROW) in 2022.

Figure 6.19 *Prepared Consumer Food Imports by Category and Origin, 2022*



Source: *CSO*

CHAPTER 7

EU and International Policy

DAFM provided funding of **€750,000** to a UN Food and Agriculture Organisation (FAO) project to provide support to 1,000 vulnerable small-family farms in Ukraine in December 2022.

Global demand for agricultural commodities for food use is forecast to **grow by 15%** over the coming decade.

Political agreement was reached between the EU and New Zealand on a **comprehensive and ambitious free trade agreement** on 22 June 2022.

7.1 Overview

The EU and International Agricultural Policy chapter offers an overview of the international factors impacting Irish agriculture, including the influence of EU agricultural policy and Brexit. This chapter also incorporates data generated by the Organisation for Economic Cooperation and Development (OECD), which monitors and advises on international trade and agriculture policy.

7.2 CAP Strategic Plan & Rural Development Programme 2023-2027

Ireland's CAP Strategic Plan 2023-2027 (CSP) was submitted to the European Commission in December 2021 and was approved in August 2022 following an intensive period of negotiation in the first half of the year. The Government approved the plan on 4th October 2022 and noted the completion of its strategic environmental assessment and appropriate assessment.

Ireland's CSP will support the development of the agriculture sector, and improve its resilience, by helping it to meet the twin challenges of delivering viable incomes for farmers and producing food in an environmentally sustainable manner. It also will contribute to maintaining vibrant rural communities. It will do so by contributing to each of the nine specific objectives of the Common Agricultural Policy (CAP), across the three areas of economic, environmental and social sustainability, as well as to the cross-cutting objective of enhancing performance through agricultural knowledge and innovation systems.

Figure 7.1 *CAP Key Objectives Focusing on Social, Environmental and Economic Goals*

The Plan will achieve the objectives through several direct support and sectoral interventions under Pillar 1, and through a range of Pillar 2 rural development interventions. The rules for Pillar 1 are set out at EU level, although Member States have flexibility to target and design measures to address their specific situations. The interventions were developed following a lengthy strategic planning process, and in close consultation with stakeholders through the national CAP Stakeholder Consultative Committee, over an 18-month period.

Financial Allocation

The EU budget agreement in 2020 provided for total CAP funding for Ireland of €7.53 billion over the five-year period from 2023 to 2027. This funding is split between Pillar I (direct payments and sectoral interventions - €5.97 billion) and Pillar II (rural development - €1.56 billion).

The allocation from the national exchequer to co-fund the rural development element of the CSP was agreed between the Minister for Agriculture, Food and the Marine and the Minister for Public Expenditure and Reform, at €2.30 billion. This funding includes carbon tax funding of €723 million. This will bring the total budget for the rural development aspects to €3.86 billion (with an effective national co-financing rate of almost 60%), and total combined EU and national funding for the CSP to €9.83 billion.

Table 7.1: *Indicative breakdown of Ireland's 2023-2027 CSP by Pillar 1 interventions*

Pillar 1 intervention	€Million
Basic Income Support for Sustainability (BISS)	€3,642.5
Complementary income support for young farmers (CIS-YF)	€177.9
Complementary redistributive income support for sustainability (CRISS)	€593.1
Eco-Scheme	€1,482.9
Sectoral Intervention for the Apiculture sector	€0.6
Protein Aid	€35.0
Sectoral Intervention in the Fruit and Vegetable Sector	€39.0
Total Pillar 1	**€5,971.0**

Source: *DAFM*

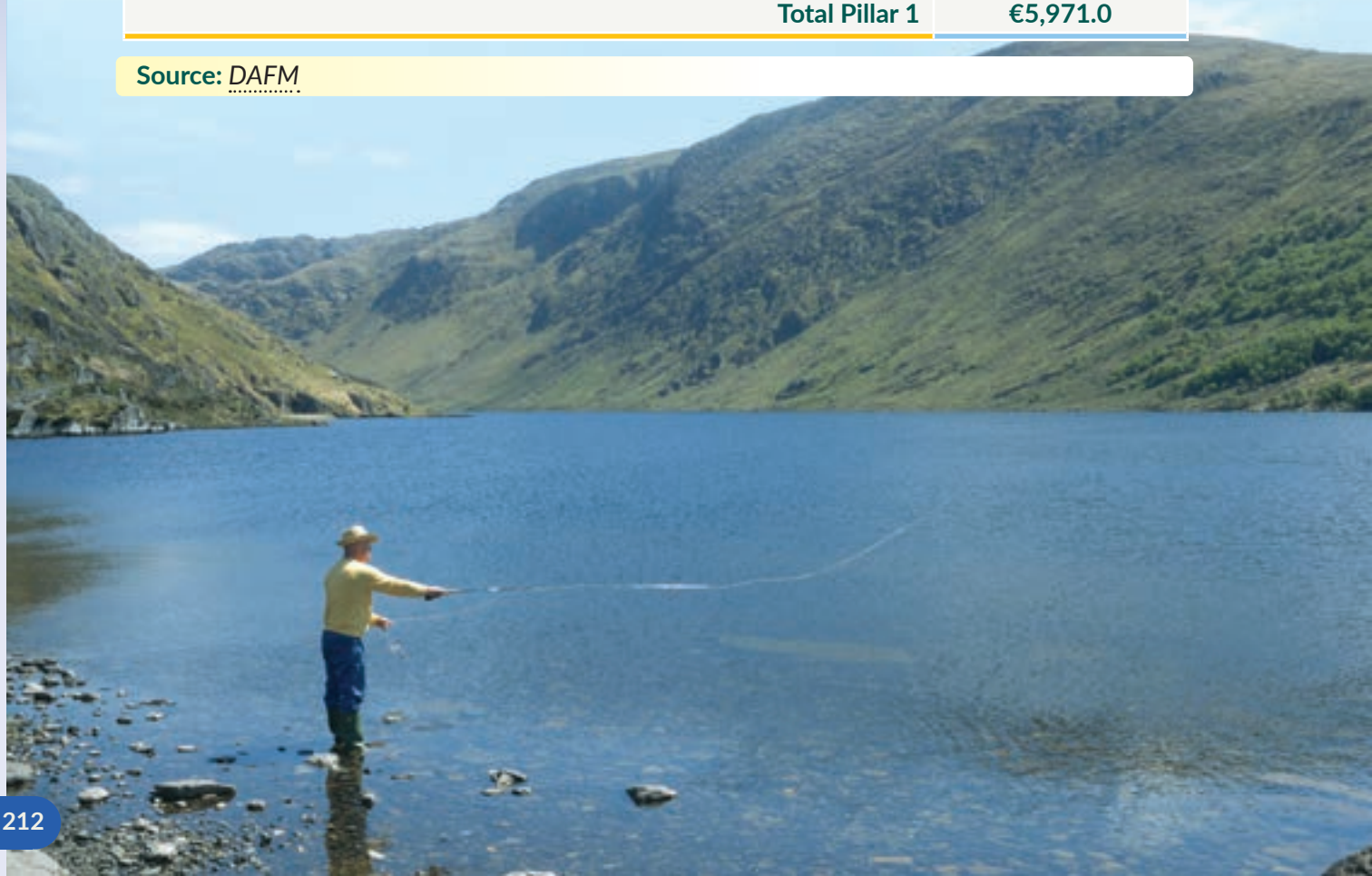


Table 7.2: *Indicative breakdown of Ireland's 2023-2027 CSP by Pillar 2 interventions*

Pillar II Intervention	€Million
Areas of Natural Constraint (ANC)	€1,250.0
Agri-Climate Rural Environment Scheme (ACRES)	€1,500.0
Agri-Climate Rural Environment Scheme (ACRES) Training	€21.5
Straw Incorporation Measure	€50.0
Organic Farming	€256.0
On farm investments	€100.0
Suckler Carbon Efficiency Programme including training	€260.0
Early-Stage support for Producer Organisations	€1.5
Continuous Professional Development for Advisors	€1.9
European Innovation Partnerships (EIPs)	€36.1
Knowledge Transfer Groups	€71.1
Dairy Beef Welfare Scheme	€25.0
Sheep Improvement Scheme	€100.0
Collaborative Farming Grant	€2.0
Technical Assistance	€6.3
LEADER	€180.0
Total Pillar 2	**€3,861.6**

Source: *DAFM*

Monitoring and Evaluation of the CSP

The new delivery model for the CSP involves a shift from a compliance-based to a performance-based system focused on outputs and results. It will involve regular reporting on performance, monitoring and evaluation activities through annual performance reports. The evaluation plan of the CSP must be submitted to the European Commission by 31st August 2023. It will outline all monitoring and evaluation activities and topics to be covered over the lifetime of the plan.

CSP Interventions

Pillar 1 - Direct Income Support and Sectoral Interventions

Basic Income Support for Sustainability

The Basic Income Support for Sustainability (BISS) is the main income support provided under the CAP Strategic Plan. It will provide direct income support to over 127,000 farmers in order to underpin their continued sustainability and viability. It will also help to ensure security of food supply. This intervention builds on the similar support provided by its predecessor, the Basic Payment Scheme (BPS). The annual financial allocation will be circa €728.5 million.

Complementary Income Support for Young Farmers

To encourage generational renewal, the Complementary Income Support for Young Farmers (CIS-YF) will provide support for up to 5 years to appropriately qualified young farmers entering the agriculture sector. Over €35 million per annum will be available to support young farmers in the years immediately following setting up as head of the holding, either solely or jointly.

Complementary Redistributive Income Support for Sustainability

The Complementary Redistributive Income Support for Sustainability (CRISS) is a new mandatory scheme in the CAP to better redistribute CAP funds from larger farms to medium and smaller sized farms. The aim is to ensure that support through CAP is targeted at those who need it the most, or those who are contributing most to the CAP objectives. It is paid to all farmers on their first 30 hectares and will redistribute amounts of over €118 million per annum.

Eco-Scheme

In line with the strong focus on environmental sustainability in the CAP, a new voluntary annual agri-environmental scheme, known as the Eco-Scheme, has been introduced under Pillar 1. It is open to all eligible farmers and rewards them for undertaking actions beneficial to biodiversity, climate, environment, and water quality. Over €296 million per annum will be available to support over 127,000 farmers who undertake at least two of the following eight proposed Agricultural practices:

1. Space for Nature*
2. Extensive Livestock
3. Limiting Chemical Nitrogen Usage
4. Planting of Native Trees/hedgerows*
5. Use of a GPS-controlled fertiliser spreader or GPS controlled sprayer
6. Soil Sampling and Appropriate Liming on all eligible hectares
7. Planting of a break crop(s)
8. Sowing of a Multi Species Sward

*Includes an enhanced option, which can count as two agricultural practices.

Apiculture Programme

The Apiculture Programme will provide support for research actions in the apiculture sector. There has been an overall decline in pollinator species in Ireland, and annual funding of over €100,000 will be dedicated to the implementation of the National Apiculture Programme.

Coupled Income Support for Protein Aid

The coupled income support for protein aid has increased to €35 million over the period. It will incentivise the production of domestic protein crops with a view to reducing the reliance on imports of protein feed materials. It will target an increase from 8,400 hectares of protein grown nationally to 20,000 hectares by the end of the Plan period.

Sectoral Intervention in the Fruit and Vegetables Sector

A sectoral intervention will provide support for existing and new Producer Organisations in the fruit and vegetables sector in order to enhance their competitiveness and improve their sustainability.

Pillar 2 - Rural Development Interventions

Areas Facing Natural Constraints

The Areas Facing Natural Constraints (ANC) scheme will provide €1.25 billion in support to farmers in designated areas who face significant hardship from factors such as remoteness, difficult topography and poor soil conditions. These payments are in recognition of the challenges faced by farmers in these areas and will help to improve farm viability and reduce the risk of land abandonment.

Agri-Climate Rural Environment Scheme

The Agri-Climate Rural Environment Scheme (ACRES), which will see total five-year expenditure of €1.5 billion, will help farmers to address a range of biodiversity, climate, and environmental issues.

The Scheme has two approaches, namely:

- ACRES General - available nationally (outside of the high priority geographical area defined for the ACRES Co-operation approach). It offers a range of actions for individual farmers to carry out on their farms.
- ACRES Co-operation - available to farmers with all or part of their holdings in defined high priority geographical areas ('zones'). It offers results-based payments for actions appropriate to these areas, as well as bespoke farm and landscape actions. Farmers in these areas will be supported by local project teams.

Agri-Environment Climate Training

The Agri-Environment Climate Training scheme will provide training to farmers who participate in ACRES. It is aimed at increasing farmers' understanding of climate change, of the impact that farming activities have on natural resources and biodiversity, and of how the ACRES actions will address those issues. It will also provide them with the knowledge and skills to effectively implement the actions, in order to optimise the delivery and ongoing management of the commitments.

Straw Incorporation Measure

This measure, with funding of €10 million per annum, and targeting 40,000 hectares per annum, will encourage tillage farmers to increase soil organic carbon levels by chopping and incorporating straw from cereal crops and oilseed rape. In addition to positive impacts on soil biology, workability and drought resilience, the measure will sequester carbon in tillage soils, thereby reducing greenhouse gas emissions. This will help to further improve the environmental sustainability of the tillage sector.

Organic Farming Scheme

The Organic Farming Scheme will see a five-fold increase, to €256 million, in support for organic farming. It will support farmers who wish to convert from conventional farming systems to organic farming systems, as well as to support their continuation after the initial period of conversion. The support aims to increase the share of land farmed organically to 7.5% over the period of the CSP.

On-farm Capital Investment Scheme

This scheme will provide support for capital investments by farmers aimed at improving the economic and environmental sustainability of their farms, as well as improving animal health and welfare, and farm safety. The financial allocation of €100 million will target 20,000 operations over the period. Higher grant rates will be available for women, young farmers and organic farmers.

Suckler Carbon Efficiency Programme (including training)

This scheme will provide support to beef farmers to improve the environmental sustainability of the national beef herd. It will build on the gains delivered thus far through the Beef Data and Genomics Programme (BDGP) and the Beef Environmental Efficiency Programme (BEEP) by improving the genetic merit of the Irish suckler herd and reducing the greenhouse gas intensity of Ireland's beef production.

Early-Stage Support for Producer Organisations

Early-Stage Support for Producer Organisations will provide support to groups of producers wishing to be recognised as Producer Organisations in the beef, sheep, potato, tillage, plant amenity, and fruit and vegetable sectors. The funding of €1.5 million over the five-year period will encourage the development of Producer Organisations (45 new groups in the first three years) and will assist primary producers in strengthening their position in the supply chain.

Continuous Professional Development for Advisors

Continuous Professional Development (CPD) for Advisors, with funding of €1.9 million over the five-year period of the CSP, will provide the necessary support and resources to allow for the up-skilling and professional development of advisors in the agricultural sector. Participation in these activities will allow advisors to enhance their knowledge base on an ongoing basis, and to ensure that they are familiar with the latest techniques, technologies and regulatory and scheme requirements in a rapidly changing agricultural industry. It will promote the development of knowledgeable, professional and competent advisors, thereby enhancing the quality of service provided to farmers.

European Innovation Partnership (EIP-AGRI) Operational Groups

Innovation support will be provided through this measure. It will provide support to a range of actors in the agricultural sector who are looking to come together to form Operational Groups to develop and test innovative solutions to particular challenges identified in the sector. The broad potential for the EIP model is recognised, with the need to encourage the application of research and innovation at farm level identified. Competitive calls will be launched over the period.

Knowledge Transfer Programme

Knowledge Transfer is an important element of the CSP, with over €70 million available over the period to 2027. It is expected that over 19,000 farmers will participate. It will support the deployment of research and innovation at farm level by providing farmers with a platform to share knowledge and to engage in learning, facilitated by professional agricultural advisors with the appropriate experience and expertise. Increasing farmers' understanding of topics such as biodiversity, water, climate change, animal welfare, and farm management, including financial management and succession planning, will ensure that the Irish agricultural sector remains resilient.

Dairy Beef Welfare Scheme

The Dairy Beef Welfare Scheme will provide support to farmers who undertake actions to improve the viability of male dairy calves in locally based production systems, by adjusting their breeding strategy to better integrate with the beef sector.

Sheep Improvement Scheme

The Sheep Improvement Scheme (SIS), with an annual budget of €20 million over the five-year period to 2027, will support actions that improve animal health and welfare in the sheep sector through targeted interventions in lameness control, parasite control, genetic improvement, flystrike and appropriate supplementation.

Collaborative Farming Grant

A key barrier preventing younger farmers accessing land is a reluctance for older farmers to release the land. The Collaborative Farming Grant, with funding of €400,000 per annum, will provide support for the administrative cost in establishing registered partnerships, as well as a parallel support for older farmers to encourage succession planning and facilitate generational renewal.

LEADER Programme

The LEADER Programme is a key rural development tool for supporting the economic and social development of rural communities, by providing the resources necessary for communities to support their own development and create capacity at local level. An allocation of €180 million over the five-year period of the CSP will support a community-led local development approach by funding initiatives that emerge through local development strategies aimed at addressing local challenges. The Programme will be operated by the Department of Rural and Community Development.

Technical assistance

The technical asssistance budget will provide support for the operation of the National CAP Network, for innovation support services, and for monitoring and evaluation requirements over the lifetime of the CAP Strategic Plan, as well as other related costs.

7.3 EU Policy Developments

Overview

During 2022, France and the Czech Republic shared the role of the President of the Council of the European Union - France from January to June and the Czech Republic from July to December. The illegal Russian invasion of Ukraine in February 2022, and its impact on agricultural markets and global food security, became a key issue which was considered at Agrifish Council throughout 2022 under both Presidencies.

Environmental issues were also a strong feature of Council Discussions. While the ENVI Council was the designated lead Council for many items, the Agrifish Council also considered these issues including:

- The revision of the Land Use and Land Use Change and Forestry Regulation (LULUCF),
- The Regulation on making available on the Union market, as well as export from the Union, of certain commodities and products associated with deforestation and forest degradation,
- The proposal for a Sustainable Use of Pesticides Regulation (SUR) and
- The Commission report on possible reciprocal environmental and health production standards for products imported from third countries and carbon farming.

During 2023 the Presidency will be held by Sweden (January to June) and by Spain (July – December). The Swedish Presidency will prioritise the progress of a number of policy areas which, although under the remit of the Envi Council, will have significant impacts on the agriculture sector. These include the revision of the Industrial Emissions Directive and the Nature Restoration Law.

In light of the Russian invasion of Ukraine, the market situation has been a key feature of European debate and was regularly discussed at Agrifish Council meetings held in 2022 and 2023. This also generated a broader debate on European Food Security. In response to the impact of the illegal invasion by Russia of Ukraine in March 2022, the Commission introduced measures under the Common Market including financial support for emergency measures to address the impact on farmers. Ireland was allocated €15.8 million to support farmers under this measure. The Commission also proposed to derogate from some of the conditionality requirements for Direct Payments in order to facilitate the increase of European cereal production. Costs of inputs were a strong concern throughout 2022 and the Commission also introduced a Communication on a Fertiliser Strategy. To further assist Member States wishing to provide necessary emergency support for the agriculture sector, a Temporary Crisis Framework for State Aid in the context of Russia's invasion of Ukraine was introduced, which allowed for a flexible response to allow Member States provide liquidity to the agrifood sector.

Organic Action Plan Sustainable Use of Pesticides Regulation (SUR)

This proposal was published by the Commission on 22nd June 2022. The proposed regulation provides a legal basis for the Farm to Fork pesticide reduction targets, to reduce the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50% by 2030. It also proposes additional requirements for the use, storage, sale and disposal of plant protection products (PPPs), pesticide application equipment (PAE), training, awareness raising and for implementation of integrated pest management (IPM). The negotiations began during the Czech Republic's presidency. Consideration of this proposal has continued throughout 2022 and into 2023. However, Member States have asked the Commission to assess further the impacts of this proposal on food security as the original impact assessment relating to the proposal was completed before the invasion of Ukraine. Further work is expected in this area.

Fitness Check of EU Animal Welfare Legislation

In October 2022, the Commission published its fitness check on Animal Welfare Legislation. While concluding that EU animal welfare legislation has improved animal welfare, despite the progress made, problems remain. Increasing societal expectations, scientific and technological developments and future sustainability challenges are not fully reflected in current rules. Hence, the current EU animal welfare legislation is considered by the Commission as not fully fit to meet current and future needs. It is expected that the Commission will put forward new legislative proposals during 2023.

Farm Sustainability Data Network

As part of the Farm to Fork strategy, the European Commission announced a proposal to convert the farm accountancy data network (FADN) into a farm sustainability data network (FSDN), with a view to collect farm level data addressing the sustainability targets and indicators. The proposal for a conversion of the FADN into FSDN was published in June 2022 and envisages to consider the environmental and social dimensions of the farming sector next to the economic one. The Commission hopes that the new rules can be implemented in 2023, to allow for the collection of the first sustainability data in 2025 and the publication of these statistics from 2026-27.

This aligns well with Ireland's agri-food strategy, Food Vision 2030. In Ireland, Teagasc already collect sustainability data, including some of the extra data that will be required under the new FSDN, and they produce an annual "Sustainability Report" to supplement the main National Farm Survey.

Industrial Emissions Directive

In April 2022, the Commission put forward proposals to update the rules on industrial emissions, extending the rules for preventing and controlling emissions to large cattle farms. Discussion on this proposal continued throughout 2022 under the remit of the ENVI Council. A Council General approach was agreed in March 2023. The next stage of the process will be trilogue discussions between the Council and the European Parliament.

Nature Restoration Law

The proposed Nature Restoration Law was formally adopted by the European Commission in late June 2022. Discussions on the proposal commenced in July 2022. The proposed Nature Restoration Law arises from a commitment in the EU Biodiversity Strategy for 2030 (published, May 2020). The Biodiversity Strategy is a core component of the European Green Deal. The Strategy sets targets to protect nature, reverse degradation of ecosystems and put Europe's Biodiversity on a path to recovery by:

- expanding protected areas to cover 30% of land and seas in the EU area, and
- restoring nature through a commitment to developing legally binding restoration targets.

The proposed Regulation provides an opportunity for transformative change in relation to achieving nature restoration in Ireland and the EU as a whole. Healthy ecosystems also provide food and food security, clean water, carbon sinks and protection against natural disasters caused by climate change. However, planning and achieving the legally binding targets set out within the timescales given will be challenging. The Department of Housing, Planning and Local Government leads on this proposal which is under the remit of the ENVI Council. DAFM is part of the Intergovernmental Group formulating Ireland's national position.

7.4 Food Systems & International Development

International Development

DAFM has responsibility for some of the elements of Ireland's international development programme and works closely with Irish Aid in the Department of Foreign Affairs and Trade in this regard. Specifically, DAFM leads on Ireland's engagement with two United Nations agencies, the Food and Agriculture Organisation (FAO) and World Food Programme (WFP).

UN- Food and Agriculture Organisation (FAO)

The FAO of the United Nations is mandated to help eliminate hunger, food insecurity and malnutrition; make agriculture, forestry and fisheries more productive and sustainable; enable inclusive and efficient agricultural and food systems; and increase the resilience of livelihoods to threats and crises. DAFM leads on the Irish Government's relationship with FAO and ensured that Ireland's position on agricultural and development matters is well represented at various FAO meetings throughout the year. Taking a food systems approach, Ireland and FAO are finding new and better ways to promote sustainable agriculture. Some €3.36 million was provided by DAFM to FAO in 2022, including the assessed contribution of €1.61 million and discretionary project funding of €1.75m in areas of strategic importance. Project funding is allocated in line with the priorities as per Ireland's development aid strategy, A Better World, including within the key strategic footprint of the Sahel and Sub-Saharan Africa. Emergency and resilience building projects, as well as support to projects that fight the spread of animal and zoonotic diseases and insect infestation, are also considered. Project funding in 2022 was €1.75 million.

Food and Agriculture Organisation (FAO) Funding 2022	€
Ireland - FAO Assessed Contribution 2022	1,609,107
Emergency livelihood support to rural households in conflict-affected Ukraine	750,000
Building resilient communities through climate smart and market driven production for improved food and nutrition security in Sierra Leone	500,000
Protecting the diets of the most vulnerable people as part of COVID-19 response and recovery programme in Kenya and Malawi	120,000
Supporting Livelihoods of Rural Women in the mountainous regions in the north of Vietnam	100,000
Global Bioeconomy Alliance (Scoping Study)	80,000
Empowering the Youth to co-develop innovative solutions food system transformations – Food Systems Transformation Hub	50,000
Livestock Environmental Assessment and Performance Partnership (LEAP)	40,000
Global Alliance for Climate Smart Agriculture Facilitation Unit (GACSA)	40,000
Global Agenda for Sustainable Livestock (GASL)	40,000
Support funding to support the work of the FAO Committee on Agriculture (COAG) Sub-Committee on Livestock	30,000
FAO Total	**3,359,107**

Aligned with a commitment in Food Vision 2030 of enhancing youth engagement in the agri-food sector, DAFM supported the participation of a seven-person youth delegation to the World Food Forum in October 2022, which was hosted by FAO in Rome.

In May 2022, Minister McConalogue opened the 11th World Potato Congress (WPC) under the theme 'The Changing World of the Potato' at the RDS. He welcomed FAO Director-General, QU Dongyu as one of the speakers and also held bilateral talks with him on worsening food security and the need to transform global food systems.

The World Food Programme (WFP)

The World Food Programme (WFP) is the United Nations organisation responsible for the delivery of food assistance to the poorest and most vulnerable people in the world. It is the largest humanitarian agency saving lives in emergencies and using food assistance to build a pathway to peace, stability and prosperity for people recovering from conflict, disasters and the impact of climate change. Ireland's commitment to the WFP, expressed through three-yearly Strategic Partnership Agreements, is €75 million for the period 2022-2024. It reaffirms Ireland's role as one of WFP's most engaged partners. Following a direct request to Minister McConalogue from WFP Executive Director David Beasley in December, an advance payment of €25 million in respect of Ireland's 2023 funding commitment was made to contribute to saving lives, supporting food security and nutrition, and rebuilding livelihoods in fragile settings.

Ireland's partnership approach with WFP, whereby funding is given in the form of untied cash donations, gives them the flexibility to plan and target its funding in the most strategic, efficient, and effective manner. The 2022-2024 Strategic Partnership Agreement again includes €8 million per annum to those countries effected by the on-going crisis in Syria, as well as €5 million per annum to the WFP hunger related climate change trust fund.

Ireland has taken a seat on the WFP Executive Board for the two-year term commencing 1 January 2023 and will focus on food systems transformation; anticipatory action (resilience); nutrition; and the Humanitarian & Development / Peace nexus.

Case Study

Ireland's Support to Vulnerable Small-Family Farms in Ukraine

In December 2022, DAFM provided funding in the amount of €750,000 to a UN FAO project to provide support to 1,000 vulnerable small-family farms in Ukraine. The project aims to rebuild agricultural capacity, increase household food security, and improve rural livelihoods in regions in rural areas impacted by the illegal Russian war in oblasts in eastern Ukraine.

The funding was allocated to a project that focuses on rebuilding agricultural capacity in poultry and egg production activities which had been impacted by significant losses of productive assets, mainly of small-holder farmers and households due to the ongoing war. The poultry sector, a vital contributor to rural livelihoods and household food security in Ukraine, has experienced a 20% loss of production capacity in the egg industry due to the conflict. The vulnerable small-holder households in frontline oblasts were the primary beneficiaries of the project. The main objectives of the FAO project funded by Ireland were:

- To provide immediate support to highly vulnerable small-holder farmers and households affected by the conflict.
- To help these households meet their immediate food needs by resuming food production activities that have been disrupted by military activity and occupation.
- To contribute to building back agricultural capacity in the affected areas.
- To increase the resilience of farms and households impacted most by the illegal Russian aggression.

FAO, who are overseeing the implementation of the project from Kyiv, provided support to impacted communities in the form of poultry production kits, including thirty one-day-old chicks, animal feed, and supplements for starter stages; and supports to purchase supplemental feed, medicines, feeders, and vacuum drinkers on the local market. This assistance has enabled rural families to resume production for their household consumption and, in turn, meet their immediate food needs.

The FAO project's focus on the poultry sector aligns with Ireland's leading role in sustainable livestock production and advocacy for the importance of animal protein in sustainable healthy diets. By providing support to vulnerable small-family farms in Ukraine, the project aims to rebuild agricultural capacity, increase household food security, and improve rural livelihoods in the affected regions. The collaboration between Ireland, Ukraine, and the FAO highlights the importance of international solidarity in addressing food security challenges in conflict-affected regions.

7.5 Organisation for Economic Cooperation and Development

Introduction

The Organisation for Economic Cooperation and Development (OECD) Committee for Agriculture provides an evidence base and analysis to support governments in improving policy performance and creating an enabling environment for the sector to thrive. They produce two publications annually that are of particular use to policy makers. The 2023 Agricultural Policy Monitoring and Evaluation report is scheduled to be published in the fourth quarter of 2023. This annual report is a unique source of up-to-date estimates of support to agriculture and is complemented by individual chapters on agricultural policy developments in all countries covered in the report. The other publication is a joint OECD-FAO Agricultural Outlook which provides market projections for major agricultural commodities, biofuels and fish. The latest OECD FAO Agricultural Outlook 2023-2030 was published in July 2023 and some of the highlights are outlined below.

OECD-FAO Agricultural Outlook 2023-2032

The Outlook provides a consensus assessment of the ten-year prospects for agricultural commodity and fish markets at national, regional, and global levels, and serves as a reference for forward-looking policy analysis and planning. The report is a collaborative effort between the OECD and FAO, prepared with inputs from Member countries and international commodity organisations. It highlights fundamental socio-economic trends driving the global agri-food sector, assuming no major changes to weather conditions or policies. However, the authors note that there is an increasing risk that greater uncertainties will lead to deviations from the current projections. This year's Outlook includes estimates of Food Loss and Waste (FLW) and the impact of rising fertiliser prices on food costs.

Key Messages

Global agricultural and food production are projected to continue to increase in the next ten years, but at a slower pace of growth than the previous decade due to a foreseen slowdown in population and per-capita income growth. Uncertainty has risen due to geopolitical tensions, adverse climate trends, animal and plant diseases and increased price volatility for key agricultural inputs. Following from these challenges, global production of crops, livestock products and fish are projected to grow at an average annual rate of 1.1% during the period, half the pace recorded in 2015. The question of food security will continue to be high on the agenda in the next decade, notably as input prices could increase.

This year's Outlook includes a special assessment of key farming input prices, which have risen significantly in the past two years. The analysis shows that every 10% increase in fertiliser prices leads to an approximate 2% increase in food costs. This is on average and varies considerably by commodity, with crop prices affected more and the burden falling hardest on the poor.

Greenhouse gas emissions from agriculture are expected to increase by 7.5% in the next decade, considerably less than the projected output growth. This indicates a significant fall in the carbon intensity of agricultural production. Global trade in agricultural commodities covered in the Outlook is projected to expand by 1.0% annually. This is half the pace recorded in the past decade, mostly due to slower growth in demand among middle-income countries.

Macroeconomic Outlook and Population Trends

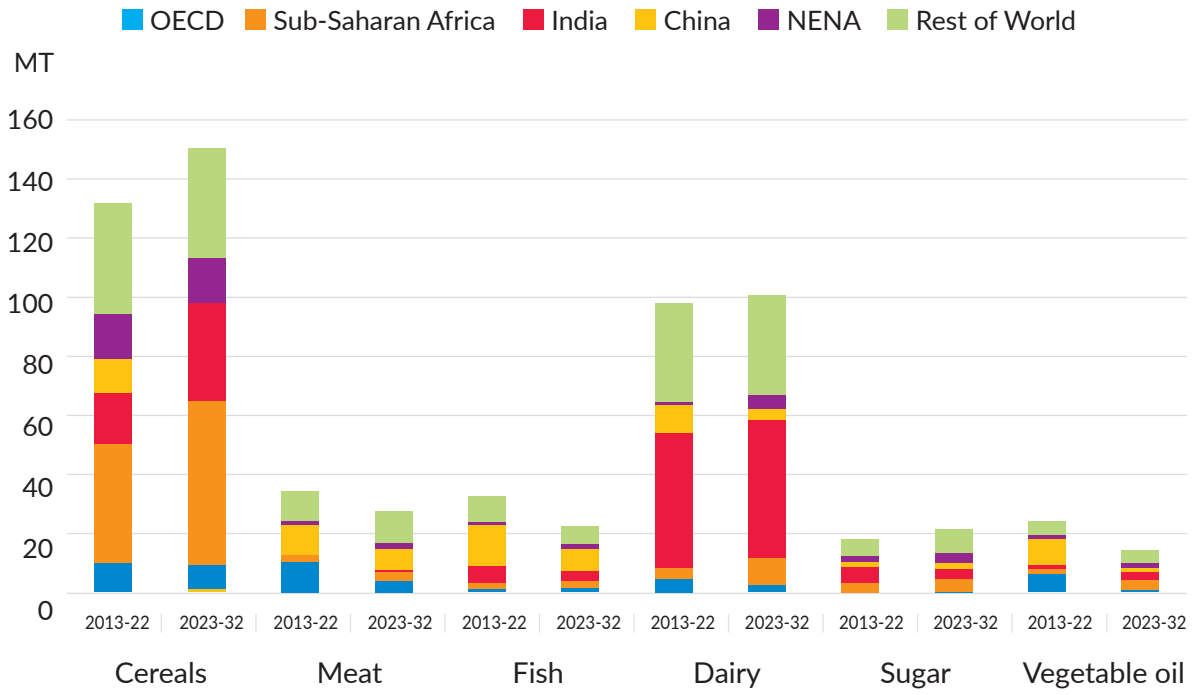
For the coming decade, real per capita income growth of 1.7% per annum is expected in the EU and the world overall. This will be accompanied by a slowdown in global per-capita income growth in the near term to 1% in 2023, compared with the 2% recorded in 2022. Global GDP is expected to grow at an annual average rate of 2.6% over the next decade, although the rate of growth will be lower in OECD countries at 1.6%. Equally, poorer socio-economic groups in developing countries may lag overall trends in real income growth. The World population

is expected to grow by 0.8% on average during 2028-32, a slowdown compared to 1.1% per annum over the last decade. Population growth will be concentrated in developing regions, with the global population rising from 7.9 billion in 2022 to 8.6 billion by 2032.

Consumption

It is expected global demand for agricultural commodities for food use will grow by 15% over the coming decade. Population growth will be the main determinant of overall demand for most commodities, with Asia continuing to play the most significant role in shaping global demand for food.

Figure 7.2 *Regional Contributions to Food Demand Growth, 2013-2022 and 2023-2032*



Note: Each column shows the increase in global demand over a ten-year period, split by region, for food uses only. NENA stands for Near East and North Africa

Source: *OECD-FAO Agricultural Outlook*

Consumers in middle-income countries are expected to increase their food intake and diversify their diets in the coming decade, generating higher demand for animal products. Diets in low-income countries will remain largely unchanged, with staples continuing to comprise the majority of calorie intake. Among high-income countries, per capita consumption of most food commodities is expected to level off due to saturation. Convergence in diets across regions and income groups will be limited. Consumption of dairy products is projected to expand, while global consumption of meat is expected to increase by 2.5% (0.7 kilograms per capita) over the Outlook period.

This year's Outlook also addresses Food Loss and Waste, which reflects inefficiencies in the Global food system. Fourteen percent (US $400 billion) of the world's food is lost on an annual basis between harvest and the retail market. At the same time, an estimated further 17% of food is wasted at the retail and consumer levels. Reducing food loss and waste is a significant lever for improving food security and sustainability as well as increasing the efficiency of food systems.

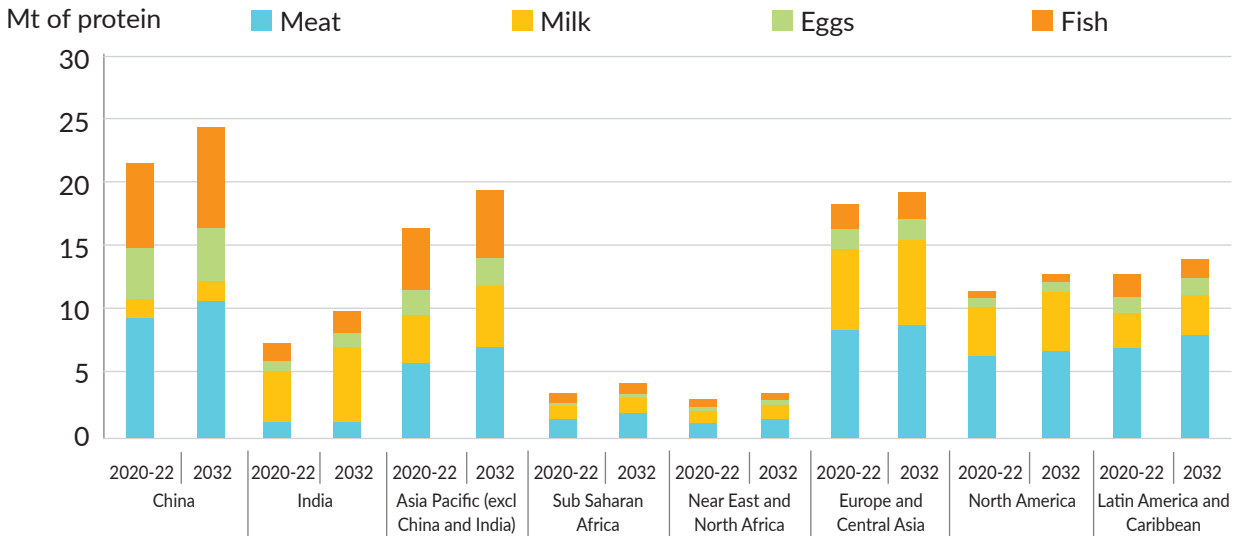
Production

The global production of crops, livestock and fish commodities is expected to increase by 1.1% per annum. This is a slower rate than in previous decades, driven by a weakening of expected gross returns for producers from both sales and due to costs developments. Projected flat or slightly declining trends of real world prices, and slower population growth, will mean the rate of growth of producer returns will slow. Input costs are expected to increase, notably because of the nexus between energy and fertiliser prices and tightening of environmental regulations. Investments and human capital will be key to productivity gains to drive production increases. The Outlook also notes that there is heightened uncertainty around agricultural production due to factors such as Russia's illegal war against Ukraine, policy changes, risks linked to animal and plant diseases and climate change.

Middle- and low-income countries will continue to drive growth. By 2032, the whole Asian region is expected to account for more than half of global crop production, almost half of livestock production, and almost three-quarters of fish production. Production growth will be driven almost entirely by anticipated productivity improvements. Growth will be slowest in Europe and Central Asia, and this will be driven by productivity improvements in Central Asia and Eastern Europe.

Global livestock & fish production is expected to expand by 10% in the coming decade, with milk and poultry output anticipated to increase by 17% and 14%, respectively. Dairy will be the fastest-growing livestock sector to 2032. Overall beef production is set to expand by 9% due to higher carcass weights as feed costs decline and animal genetics improve.

Figure 7.3 *Global Livestock and Fish Production on a Protein Basis*



Source: *OECD-FAO Agricultural Outlook*

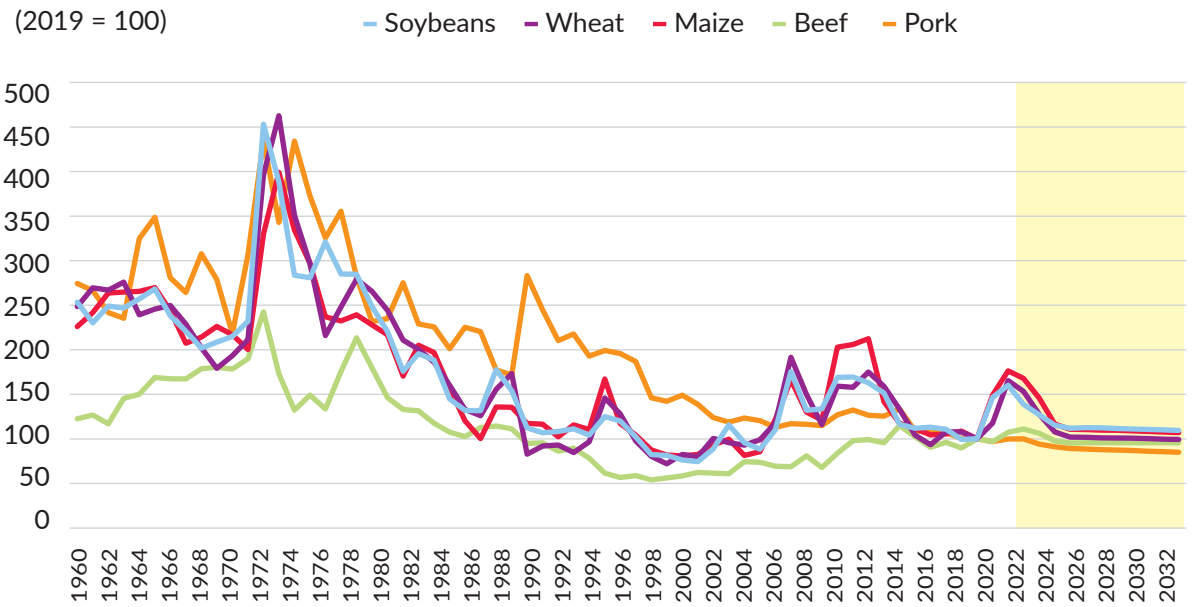
Increases in global dairy production will be driven by expanding yields due to optimisation of milk producing systems, improvements in genetics, better animal health and feeding efficiencies. Dairy production in the EU is expected to decline slightly in response to the ongoing transition towards environmentally sustainable production, the expansion of organic production, and the shift from intensive to pasture-based production systems.

Global fish production is expected to grow by 12% over the period, a slowdown compared to the previous decade. This is due to policy changes in China toward more sustainable practices, as well as the expectation that 2024, 2028 and 2032 will be El Nino years that will result in lower production. Aquaculture is expected to account for a majority of global fish production by 2032.

Prices

Over the coming decade, most commodities are expected to see real prices stagnate or decline at a low rate. Real food prices, following a spike induced by market disruptions in recent years, are expected to moderate at their current level. The overall FAO food price index will fall sharply in the early years of the Outlook forecast period. Nominal prices will increase from 2025, although prices will moderate in real terms.

Fig 7.4 *FAO Long-term Evolution of Commodity Prices, in Real Terms*



Source: *OECD-FAO Agricultural Outlook*

Meat prices are projected to decline in 2023 and continue to gradually fall in real terms over the next decade. This will be driven by demand weakening, supply chains stabilising, continued productivity growth and decreasing feed costs. Dairy prices are expected to stabilise at their 2023 level in real terms, following the decline from elevated prices in 2021 and 2022.

Trade

International agricultural trade plays a critical role in improving the efficiency of food systems. It enables the flow of products from countries that are relatively well-endowed in natural and other resources, to processors and consumers in less well-endowed countries. Agricultural trade is therefore essential to ensure food security in some regions, and an important source of income in others. Over the coming decade, some countries are projected to experience large population and/or income-driven increases in food demand, but without sufficient resources to supply that demand. Moreover, socio-cultural and lifestyle-driven changes are transforming consumption patterns in most regions. Trade will also help to smooth food supply fluctuations and share production risks across countries, acting as a buffer in case of shocks to domestic or international markets. The share of production traded is stabilising, with growth in trade and production expected to be more closely aligned.

Over the next decade, agricultural trade will expand for most commodities although at a slower pace, mainly because there will be a slowdown in demand growth from China. Europe has moved from being a net importer to a net exporter, partly due to a static population and flat per capita consumption, which have limited domestic demand. Net exports from Europe and Central Asia are expected to continue to increase. However, the rate of increase in trade surpluses is expected to slow in the short run because of Russia's war against Ukraine. The small trade deficit seen in recent decades in Western Europe, in aggregate, will continue to fall in the coming decade. At a global level, a shift from globalisation to regionalisation of agricultural supply chains is anticipated.

OECD meeting of Agricultural Ministers 2022

The OECD meeting of Agricultural Ministers was held on 3rd & 4th November 2022. The meeting was the first such meeting since 2016 with over 45 agricultural Ministers in Paris. The purpose of the meeting was to share experiences and agree priority actions for OECD related work to contribute to "Building Sustainable Agriculture and Food Systems in a Changing Environment: Shared Challenges, Transformative Solutions". The meeting was co-chaired by the Canadian and New Zealand Ministers for Agriculture. The main outcome of the meeting was the adoption of a Ministerial Declaration that sets the priorities for the sector over the coming five years and calls for OECD analyses for specific topics related to the triple challenge of ensuring food security, strengthening sustainability and ensuring livelihoods. Minister McConalogue attended the meeting and chaired a breakout session on "Building Long-Term Resilience". The Minister also addressed the plenary session outlining Ireland's vision for a sustainable future for the agri-food sector and how working together will help to identify best-practice solutions.

7.6 International Trade Developments

Introduction/ Overview

International Trade plays a vital role in the development of the Irish agri-food sector with exports to over 180 countries globally. The international rules-based trading system at the World Trade Organisation and preferential trading terms provided by Free Trade and Economic Partnership Agreements negotiated by the EU with 3rd country trading partners play an important role in supporting the Irish agri-food sector's ambition to grow the value of its exports.

The United Kingdom's exit from European Union in 2022 continued to present a number of challenges for agri-food exporters to that market, the largest market for Irish agri-food exports. The ongoing uncertainty associated with the postponement of United Kingdom import control requirements and issues related to the implementation of the Northern Ireland Protocol also contribute to the challenges.

A number of EU Free Trade Agreement negotiations with third countries made important progress in 2022, including political agreement on the conclusion of a new agreement with New Zealand. This agreement with New Zealand also demonstrated the key contribution these agreements can make to action on climate change by providing for stronger and more enforceable sustainability commitments and prioritising a specific list of green goods and services for greater trade liberalisation.

While supportive of trade liberalisation and the opportunities presented to a small, open exporting country, Ireland continues to take a balanced approach to EU Free Trade Agreements, in particular that the provisions of such agreements have due regard to sensitive EU agri-food sectors such as beef, sheepmeat and dairy.

A series of in person, Ministerial led, Trade Missions were undertaken in 2022 to the Middle East, US, Mexico, Japan, Singapore and Vietnam. These Trade Missions were targeted at promoting Irish agri-food products in key priority growth markets.

Brexit/Northern Ireland Protocol

The post Brexit EU-UK Trade and Cooperation Agreement (TCA) has been in force since 1 January 2021. As part of the agreement, the United Kingdom decided to remain outside of the EU Customs Union and Single Market and this has brought about significant changes to the EU-UK trading relationship, specifically to the application of customs and sanitary and phytosanitary requirements. Since then, DAFM and industry have remained fully focused on implementing these changes.

In April 2022, the United Kingdom again postponed the introduction of its new sanitary and phytosanitary (SPS) import controls to be applied to imports of EU goods, the third such postponement since the end of the Brexit transition period. The new United Kingdom import controls, including export health certification requirements, were due to commence from 1 July 2022 but have been deferred until early 2024. As these new requirements will apply to EU imports of agri-food products, DAFM will prepare extensively for these changes in conjunction with industry.

During 2022 and into 2023 the EU continued to engage with the United Kingdom on issues raised relating to the implementation of the Northern Ireland Protocol. In February 2023, the EU and United Kingdom announced agreement on the Windsor Framework, which provides for a number of new provisions to address the concerns raised by stakeholders in Northern Ireland in respect of post Brexit trading arrangements. It is hoped that the solutions agreed in the Windsor Framework will provide an improved context for the positive development of the future EU- United Kingdom relationship and bilateral cooperation with the United Kingdom.

Comprehensive Economic Trade Agreement (CETA)

The Comprehensive Economic and Trade Agreement is a free-trade agreement between Canada and the European Union and its member states. Following a process of legal review, this agreement was signed on 30 October 2016. On 15 February 2017, the European Parliament gave its consent for CETA and on the 21 September 2017, the agreement entered provisionally into force. As such, most of the agreement including its trade aspects now apply. The overall outcome is satisfactory for Ireland's agri-food sector with increased access to the Canadian market for EU beef and dairy products.

The agreement will enter into force fully when all EU Member State parliaments have ratified the agreement. As of February 2023, nine EU Member States have not ratified CETA: Belgium, Bulgaria, Cyprus, France, Hungary, Ireland, Italy, Poland, and Slovenia. The German Parliament ratified CETA in December 2022.

The Government is committed to the ratification of CETA, but there is a current legal process which has delayed this ratification process. In November 2022, the Supreme Court ruled by a majority of four to three that the Constitution precludes the Government from ratifying CETA as Irish law stands. The specific findings of the Court relate to provision for arbitration system for investments, which could impact on sovereignty provisions of Constitution.

The Department of Enterprise, Trade and Employment are currently reviewing the implications of the Supreme Court decision and next steps to allow the ratification process progress.

World Trade Organisation (WTO) – 12th Ministerial Conference

The 12th WTO Ministerial Conference took place in Geneva from 12th to 17th June 2022, where Ireland was represented by the then Tánaiste and Minister for Enterprise, Trade and Employment, Leo Varadkar TD. For the first time in a number of years, a package of agreements was secured which have re-enforced the position of the WTO as a key institution for the global rules-based system. The Ministerial Conference agreed commitments to WTO reform, specifically revised dispute settlement mechanisms by 2024, a Fisheries Subsidies Agreement and a Food Security Declaration. From Ireland's perspective, an invigorated WTO system is important to the Irish economy, which is based on the effective operation of the open, consistent, and fair global trading system which WTO agreements support.

Ireland strongly supported the outcomes of this Ministerial Conference. In particular from a fisheries perspective, the Fisheries Subsidies Agreement is seen as an important step in supporting global efforts to improving the sustainability of fish stocks and our oceans by prohibiting support for illegal, unreported, and unregulated fishing and bans support for fishing in overfished stocks. The agreement also takes a first, but significant step towards curbing subsidies for overcapacity and overfishing by ending subsidies for fishing on unregulated high seas.

EU-Chile

The EU and Chile concluded negotiations on the modernisation of a previous trade deal and announced political agreement on an Advanced Framework Agreement on 9th December 2022. This agreement is broken down into two parts – an "Interim Free Trade Agreement" which can come into effect following internal EU ratification procedures and a "Comprehensive Agreement" which will require ratification from parliaments from all member states.

The impact on sensitive agri-food products is low in comparison with some other free trade agreements. Nonetheless, there is an opportunity for the Irish dairy industry in Chile, which has been developing in recent years, through the removal of tariffs on EU dairy products.

The draft text of the Advanced Framework Agreement has been published by the EU Commission and is currently undergoing translation and legal scrubbing.

EU-Mercosur Association Agreement

Political agreement was announced on a new Free Trade Agreement between the EU and the Mercosur trade bloc in June 2019 following over 20 years of negotiations. The EU Commission had hoped to put this agreement forward for ratification in 2022, however concerns were raised by a number of EU member states, including Ireland. Concern was noted regarding the need for additional enforceable commitments on sustainability and environmental protections, including climate and deforestation, contained within the agreement. The ratification process has not been activated yet.

When the final text of EU-Mercosur agreement is presented to EU Member States for ratification, Ireland's position will be informed by its assessment of the additional sustainability commitments secured by the EU, as well as by the findings of the Economic and Sustainability Impact Assessment of the agreement commissioned by the Irish Government.

EU-Australia

Negotiations on reaching a new trade deal between the EU and Australia commenced in 2018 and have continued, with the 14th round of negotiations having concluded in February 2023. In its latest report, the Commission stated that there was a shared commitment towards an ambitious and comprehensive agreement from both parties.

To date, market access for the most sensitive agri-food products from an Irish perspective have not been discussed in negotiations. Ireland continues to request that any market access offer made by the Commission does not undermine EU markets for the most sensitive product categories, including beef and sheepmeat. This agreement could provide for potential opportunities for Irish exporters in the areas of pigmeat and beverages, of which Australia imports a significant amount.

A further intensification of negotiations is expected in 2023, with an aim to conclude negotiations.

EU-India Free Trade Agreement Negotiations

The EU and India agreed to resume negotiations for an ambitious and comprehensive free trade agreement in May 2021 and launched separate negotiations for an Investment Protection Agreement and an Agreement on Geographical Indications (GIs). The third round of these renewed negotiations took place in late 2022 but are still considered to be at an early stage.

Ireland currently has limited exports to the Indian market, with beverages being our main export. A free trade agreement with India could represent a significant opportunity to develop into one of the world's largest marketplaces.

The fourth round of negotiations is scheduled to take place in March 2023.

EU-Republic of Korea Free Trade Agreement

The EU-Republic of Korea Free Trade Agreement was formally ratified in December 2015.

It went further than any previous agreements in lifting trade barriers and was also the EU's first trade deal with an Asian country. The FTA fully liberalised nearly all EU agricultural exports. For example, duty free access for wine from day one, whiskey in year 3 and there were valuable duty-free quotas for products like cheese from entry into force of the agreement.

In November 2022, "Irish Cream" joined "Irish Whiskey/Irish Whisky" as a protected GI under this Agreement granting these products new protections on the Korean market.

New Market Development

The pursuit and development of markets for Irish agri-food exports is an ongoing and central component of the strategic development of the agri-food sector. Food Vision 2030 includes ambitious growth targets for the value of Irish agri-food exports and a focus on new market development. In recent years, DAFM commissioned Bord Bia to undertake a market prioritisation project for meat, dairy, prepared consumer foods, beverages, and seafood. The outputs of these studies inform DAFM policy in this area, as well as the allocation of Bord Bia resources in terms of its route-to-market support services for client companies including market study visits, trade missions, trade fairs and inward buyer visits. It is also helps to inform client companies in their thought process and planning. The promotion of Ireland's high-quality, safe, nutritious, and sustainably produced food remains a core objective of DAFM and its agencies.

Trade Missions

A key component to support the sector in meeting its growth ambitions are high-level Ministerial-led trade missions. Food Vision also supports the development and diversification of international markets for Ireland's high quality sustainably produced agri-food.

Despite the challenges presented by the aftermath of the Covid-19 pandemic, 2022 saw a return to in-person trade missions by DAFM's Ministerial team. Trade missions to priority markets and leading key customer meetings over the last year included:

- In February 2022, Minister McConalogue participated in Food, Agriculture and Livelihoods Week at EXPO Dubai 2020. While in the UAE, the Minister lead successful trade engagements at Gulfood 2022. This trade mission was then complemented by a separate Trade Mission to Saudi Arabia.
- In April 2022, Ministers McConalogue and Heydon led successful trade missions to the USA and Mexico. Relevant trade and high-level market access engagements were held in Chicago, Columbus Ohio, Washington D.C., San Antonio Texas, and Mexico City.
- In July 2022, Minister Hackett led a successful trade mission, specifically targeting the organic sector, to BIOFACH in Nuremberg in Germany and with further trade meetings in Munich.
- In September 2022 both Ministers McConalogue and Heydon led successful trade missions to Japan, Singapore, and Vietnam.
- In December 2022, Minister McConalogue and Heydon hosted Bord Bia trade receptions in the Irish Embassies in London and Paris respectively.

These Missions included participants from across the agri-food sector and featured extensive trade promotion event contacts, high level engagement with senior executives in leading customers for Irish food, as well as high-level political discussions. Government agencies such as Bord Bia, Sustainable Food Systems Ireland, Irish Thoroughbred Marketing and Enterprise Ireland supported and participated in these trade missions to sustain and expand our trade profile overseas. These engagements covered a wide range of agri-food products across the meat, seafood, dairy, beverage, racing and agri-tech sectors.

A further full programme of Ministerial trade missions is scheduled for 2023. These overseas trade promotion engagements will be focused on China, Nigeria & Senegal and the Philippines & Malaysia.

CHAPTER 8

Environment

Agriculture GHG emissions decreased in 2022 by **1.2% or 0.29 Mt CO2eq,** compared to 2021.

The Sectoral Emissions Ceilings has set a **target of 10%** of national gas demand, to come from Biomethane by 2030.

Almost **41,000 farmers** applied to participate in the National Liming Programme

8.1 Overview

Ireland is committed to achieving a 7% average yearly reduction in overall greenhouse gas emissions from 2021 to 2030 and net zero emissions by 2050. A 2030 emissions reductions target of 25% has been set for the Agricultural Sector. The Climate Action and Low Carbon Development (Amendment) Act 2021 will drive a number of policies to help achieve these goals. Under the act, Climate Action Plans have been published for 2019, 2021, 2023 with the 2024 version currently in draft. These plans contain specific actions for the Agricultural sector with the aim of meeting our 2030 and 2050 targets, as well as the carbon budgets. The CAP strategic plan 2023-2027, which has been approved by the EU Commission, was developed with these targets in mind and further contributes to the achievement of the 2030 targets.

Given the changing climate and the significant effects on agriculture, food production, habitats and biodiversity, including adaptation and building resilience in the development of Agricultural policy plays a key role in addressing climate change, restoring & enhancing biodiversity and improving water & air quality, while protecting the economic viability of our primary producers.

Food Vision 2030

Food Vision 2030 aims for Ireland to be a world leader in Sustainable Food Systems, sustainability in all its dimensions – environmental, economic and social - taking a food systems approach, a more holistic view of agri-food. One its four missions is for a Climate Smart, Environmentally Sustainable Agri-Food Sector, encompassing emissions reductions, carbon sequestration, improvements in air quality, restoration and enhancement of biodiversity, improvements in water quality, development of diverse forests, enhanced seafood sustainability, exploring the bioeconomy and strengthening Origin Green.

8.2 National Climate Change Strategy

Climate Action Plan

The Climate Action Plan follows the Climate Action and Low Carbon Development (Amendment) Act 2021, which commits Ireland to a legally binding target of net-zero greenhouse gas emissions no later than 2050, and an economy wide reduction of 51% by 2030.

In late July 2022, the Government agreed ceilings for emissions from each sector of the economy, setting out the maximum limits on greenhouse gas emissions from each of these sectors up until the end of this decade. As its contribution to the overall 51% cut in emissions, the agriculture sector is required to cut its emissions by 25% by 2030, compared to 2018 levels.

The 2023 Climate Action Plan was launched on 21st December 2022 following the publication of the agreed sectoral ceilings for agriculture. The target for agriculture is 106MT and 96MT assigned for budget periods 2021-2025 and 2026-2030 respectively. These targets reflect challenging but achievable ones for the sector. Science and technology solutions are evolving, and significant breakthroughs are being made in areas like feed additives, which will provide viable solutions in future years. Nitrogen application is reducing and there is a focus on earlier age of cattle finishing, forestry and organics.

The production of indigenously produced biomethane, including a commitment of 5.7 TWh of biomethane production in Ireland by 2030, is firmly rooted in achieving the sectoral emissions ceiling for agriculture. Within the 2023 Climate Action Plan, there is a commitment to co-lead on the development of a national biomethane strategy with Department of the Environment, Climate and Communications (DECC), the first important step in realising this potential. Anaerobic digestion, which is the conversion of organic matter to methane-rich biogas, has a key role to play in the decarbonisation of our energy system. It provides an alternative and diversification opportunity for farmers while building our capability and capacity across the agriculture sector and the bioeconomy in general.

The CAP Strategic Plan 2023-2027 will provide funding to support many of the actions necessary in reaching our emission targets. With a budget €9.8 billion, it includes of €1.5 billion for the new agri-environment scheme ACRES, a five-fold increase in funding for organic farming to €256 million with a target to triple the area of land farmed organically to 7.5%, and €260 million for the Suckler Carbon Efficiency Programme (SCEP) to improve the carbon efficiency of the suckler herd through genetic improvement.

While this is an ambitious plan for the Irish Agriculture sector it is one that will put Ireland on a more sustainable path, cutting emissions, creating a cleaner, greener economy and society, while protecting us from the devastating consequences of climate change.

Adaptation

Adaptation actions aim to reduce the impacts of climate change and to take advantage of any opportunities presented by climate change. Adaptation actions such as planting of multispecies swards, for example, are becoming more widespread due to their resistance to extreme weather conditions and they are also proven to reduce our dependency on chemical nitrogen while maintaining forage output.

Nationally, the Climate Action and Low Carbon (Amendment) Act 2021 included new provisions allowing for joint sectoral adaptation plans and placing the Climate Change Advisory Council Adaptation Committee on a statutory footing. In the Climate Change Advisory Council Annual Review 2023, it included the following recommendations for the agriculture and Land Use, Land Use Change and Forestry (LULUCF) sectors:

- Government should actively support income diversification opportunities for farmers.
- Government should ensure sufficient supplies of greener forms of fertiliser are available and launch an information programme for farmers.

- Urgent consideration should be given to the opportunities for roll out of feed additives for dairy farms that reduce methane emissions from cattle.
- A streamlined process for applications for the new forestry scheme will be needed to ensure speedy implementation.

In 2021, the Climate Change Advisory Council introduced the annual 'adaptation scorecard' to assess Ireland's adaptation progress across sectors. The scorecard is based on the detailed response to a questionnaire sent out to each sector.

The assessment considers the degree to which the Adaptation Committee and Council are satisfied progress is being made in implementing adaptation policy and increasing resilience to date with respect to the following three criteria, and an overall assessment:

1. Risk, prioritisation and adaptive capacity – where sectors are identifying, prioritising and monitoring risks, are addressing knowledge gaps and building adaptive capacity.
2. Resourcing and mainstreaming – where sectors are taking future climate into account in decision making and are ensuring that adaptation is being mainstreamed and appropriately resourced.
3. Governance, coordination and cross-cutting issues – where sectors are ensuring good coherence with other policies and systemic coordination is in place, both within the sector and across other sectors.

The Adaptation Scorecard represents adaptation progress across the various sectors for the current year only and does not consider adaptation progress in previous years.

The mainstreaming of adaptation continues with adaptation measures and actions included on the Climate Action Plan 2023, the Forestry Strategy, CAP Strategic Plan (2023-2027), Food Vision, the Horticulture Strategy and the Nitrates Action Programme. Many actions would also be deemed dual benefit actions, where the benefits to adaptation and mitigation are integrated.

Outlook

Under the Climate Act, the Minister for Environment, Climate and Communications must review the National Adaptation Framework (NAF) not less than once every five years after the date of approval by Government. Development of the new NAF is currently underway and is expected by the start of 2024. The new framework will also include guidelines for the sector specific Sectorial Adaptation Plans (SAP). The Climate Action Plan 2021 echoes this requirement and requires that a public consultation to inform the review be launched by the end of Q1 2022. This consultation commenced in May 2022 and closed in July 2022. DAFM completed a review of Agricultural, Forest and Seafood SAP in 2021, and the new SAP will be required by 2025.

8.3 Bioenergy

As part of the European Green Deal, the European Commission has committed to achieving a series of actions under the Fit for 55 Package. It is a highly significant, cross-sectoral package detailing the binding actions, by which it is proposed the EU will reduce greenhouse gas emissions by at least 55% by 2030, as compared to 1990 levels. The Fit for 55 package consists of proposals to amend existing legislation, as well as new initiatives in climate, energy & fuels, transport, buildings, land use and forestry.

There is also the REPowerEU Plan proposed by the European Commission which aims at rapidly decreasing the European Union's dependency on Russian fossil fuels. Measures related to renewable energy and energy efficiency include increasing EU's 2030 target to 45% renewables in the EU mix, up from the current target of 40% or an additional 169GW to the Fitfor55 2030 target of 1,067 GW.

In July 2022, as part of the Sectoral Emissions Ceilings the Department of Environment, Climate and Communications (DECC), published a target of 5.7 TWh, 10% of national gas demand, to come from Biomethane by 2030.

While energy policy is a matter for DECC, DAFM continues to work very closely on related matters promoting energy efficiency. These include increasing on-farm generation of renewable energy and regulating agricultural feedstocks to produce indigenous biomethane as the renewable alternative to natural gas. There will be increased opportunities for the agriculture sector to turn renewable biological resources and agriculture by-products into value-added bio-based products and bio-energy. Realising the potential of such opportunities will require sustained attention over the period ahead.

In addition, DAFM continues to support farmers, foresters and landowners to participate in this energy transition through achieving energy use efficiencies, the deployment of renewable energy technology sources for self-consumption and in the provision of biomass feedstocks.

Capital Supports for Renewal Energy

Solar Capital Investment Scheme

TAMS 3 Solar Capital Investment Scheme was announced and opened for applications in early 2023. The Solar Capital Investment Scheme will encourage the purchase of solar investments, thereby reducing dependence on fossil energy. Farmers will be able to apply for a Solar PV grant for their farm. The Scheme will be ring fenced with its own investment ceiling of €90,000 and will be grant aided at the enhanced rate of 60%.

Adoption of sustainable energy practices at farm level, including energy efficiency, deployment of renewables at farm level and the provision of agriculture feedstocks for renewable energy generation, is a key climate pillar for the agriculture sector in:

- Reducing energy costs on farm;
- Reducing the carbon footprint at farm level; and
- Contributing to the decarbonisation of the overall energy system.

Microgeneration Support Scheme

The Microgeneration Support Scheme was launched in December 2021 by DECC. It provides a range of supports to assist homes, businesses and farms to develop renewable generation for self-consumption. It also provides a micro-generation enabling framework to introduce payments to micro-generators for exported electricity.

Non-Domestic Microgen Grant

The Non-Domestic Microgeneration Grant (NDMG) provides financial assistance to help businesses and other sectors to install solar PV panels to generate electricity on site. This technology reduces commercial electricity costs and increases security of supply, while enhancing a positive sustainability image. Grant funding is available for systems up to a maximum 1,000kWp. This grant is available to businesses, the agricultural sector, public sector bodies, schools, community centres and non-profit societies. This grant is offered through the Sustainable Energy Authority of Ireland (SEAI).

The Support Scheme for Renewable Heat (SSRH)

State support is available for anaerobic digestion and biomass through the Support Scheme for Renewable Heat (SSRH) available through the SEAI. This Scheme provides financial support for operational support for biomass and biogas heating systems. It also bridges the gap between the installation and operating costs of renewable heating systems and the conventional fossil fuel alternatives. It supports an installation grant and ongoing operational support for some technologies for a period of up to 15 years. Technologies which are part of this Scheme are as follows:

- Air source heat pumps
- Ground source heat pumps
- Water source heat pumps.
- Biomass boiler or biomass HE CHP heating systems
- Biogas (anaerobic digestion) boiler or biogas HE CHP heating systems.

Renewable Heat Obligation Scheme

Government has decided to introduce an obligation on the heat sector to include renewable heat by 2024. The renewable heat obligation (RHO) will support an increased use of renewable energy in the heat sector and contribute to a reduction in emissions in line with Ireland's climate ambitions. As Ireland imports most of its fossil fuels, the heating sector is a significant contributor to Ireland's high energy import dependency. The RHO will also help reduce our reliance on imported fossil fuels and strengthen our energy security due to greater diversification of our energy streams. The cost impact could, therefore, be spread across all consumers of non-renewable fuels and the financial burden would not fall on any particular sub-sector or area.

CAP23 commits to the introduction of this Obligation by Q1 2024, and impact analysis on potential obligation parameters is currently underway, the results of which will inform the basis of the next phase of stakeholder engagement. This phase of consultation is due to launch in the second half of 2023 and will include an online public consultation and engagement with key stakeholders. Feedback received will directly inform the final structure of the RHO.

Anaerobic Digestion

The Anaerobic Digestion (AD) industry in Ireland is at a nascent stage of development, when compared to the more established industry in many European countries. There are potential opportunities for farmers to participate in this sector not only as owner/operators of AD plants but also in the provision of feedstocks to the industry. Anaerobic Digestion can use a range of feedstocks from food waste to animal slurries and poultry litter to grass and other silage crops. AD and the production of renewable gas has a key role to play in the decarbonisation of our energy sector and will provide an opportunity for land use diversification and income for farmers. DAFM has a key regulatory role to play when using animal-by-products as feedstock for Anaerobic Digestion.

> *Government has decided to introduce an obligation on the heat sector to include renewable heat by 2024.*

Biomethane Strategy

As a first key step, Climate Action Plan 2023 commits to developing a National Biomethane Strategy, which is being co-led by DAFM and DECC. The objective of this strategy is to develop an agri-centric model of biomethane production that will provide diversification opportunities for farmers through the supply of a variety of agricultural feedstocks. In addition, this biomethane (renewable gas) will be used to decarbonise the energy system through the displacement of fossil gas.

Development of the strategy will include careful and extensive research on scaling up the anaerobic digestion industry to help us meet the targets set out in the government decision on sectoral emissions ceilings. A dedicated biomethane steering group has been established under the auspices of the Heat and Built Environment Taskforce. The group oversees an all-of-government approach to developing the strategy.

A primary focus of the working group is an examination of the types of supports necessary to kick start this industry. The group will also carry out extensive analysis on the best end use of the 5.7TWh target of biomethane production in Ireland by 2030, along with a focus on production in a sustainable manner. The group is currently developing a high-level action plan which will include extensive stakeholder engagement activities.

Biomass Supply

Wood grown in Irish forests is a valuable commodity and it is used across a wide variety of applications including bioenergy. Material derived from thinning operations can be used as bioenergy to offset the use of fossil fuels. Thinning operations can also enhance the quality of the final timber produced. When this timber is then used to manufacture wood products, the sequestered carbon remains stored until the end of life of the product, which further mitigates climate change. Other forest harvest biomass such as brash and smaller materials, not suitable for wood products, can also be used for bioenergy purposes.

DAFM supports the mobilisation and use of forest biomass through the All-Ireland Roundwood Production Forecast 2021 -2040, which provides the best available information on future wood supply from Ireland's forests. This report informs energy users in the biomass supply chain to estimate predicted supplies now and into the future. A spatial geographic information system (GIS) map browser is available to allow the user to define a specific geographic area and to make custom-made forecasts of available wood biomass.

Outlook

There is an opportunity for the farmers, foresters and landowners to become more actively involved in the generation of renewable electricity, primarily for on-farm use, while also supplying biomass feedstocks to the renewable energy sector.

DAFM remains committed to providing supports for energy efficiency measures and renewable energy production, in particular for grant support for solar PV, as provided through TAMS. DAFM has developed and will continue to develop a number of schemes and initiatives designed to increase the energy generated from renewable sources, whilst also reducing greenhouse gas emissions in Ireland. There is a potential for increased farmer involvement in the provision of agricultural feedstocks to the anaerobic digestion sector. Farmers will continue to play a lead role in meeting our commitments under the Climate Action Plan with the plan helping to identify new income streams for them. The targets are challenging but deliverable, with anaerobic digestion identified as one of the key areas for development. This could help us achieve our goal for 5.7TWh by 2030. The Biomethane Strategy due to be delivered in second half of 2023, will set out a roadmap to develop a sustainable biomethane industry of scale, meeting the ambitious production targets.

Outlook

There is an opportunity for the farmers, foresters and landowners to become more actively involved in the generation of renewable electricity, primarily for on-farm use, while also supplying biomass feedstocks to the renewable energy sector.

DAFM remains committed to providing supports for energy efficiency measures and renewable energy production, in particular for grant support for solar PV, as provided through TAMS. DAFM has developed and will continue to develop a number of schemes and initiatives designed to increase the energy generated from renewable sources, whilst also reducing greenhouse gas emissions in Ireland. There is a potential for increased farmer involvement in the provision of agricultural feedstocks to the anaerobic digestion sector. Farmers will continue to play a lead role in meeting our commitments under the Climate Action Plan with the plan helping to identify new income streams for them. The targets are challenging but deliverable, with anaerobic digestion identified as one of the key areas for development. This could help us achieve our goal for 5.7TWh by 2030. The Biomethane Strategy due to be delivered in second half of 2023, will set out a roadmap to develop a sustainable biomethane industry of scale, meeting the ambitious production targets.

8.4 Bioeconomy

The bioeconomy encompasses sectors that conserve, use, process, distribute or consume biological resources from land and sea. It is an approach focused on sustainability and circularity from innovative high value biobased products required for daily lives. The bioeconomy integrates with agriculture, horticulture, forestry, food processing and organic waste sectors and land and marine ecosystems. Bioeconomy policies enable the development of bio-based material (food, fibre, bio-based chemicals and materials, energy) in tandem with non-material products and services (clean air and water, biodiversity, climate mitigation and adaptation, recreation).

The value added of the Irish bioeconomy totalled €17.2 billion and the turnover amounted to €55.2 billion in 2020. Agriculture, food and beverages are the largest sectors in the bioeconomy. The number of people employed in the bioeconomy was 188,200.

Bioeconomy Policy Coordination and Consultation

The National Policy Statement on the Bioeconomy published in 2018 set out a vision, common principles, strategic objectives, and an implementation framework to develop the bioeconomy across relevant sectors. The high-level Bioeconomy Implementation Group (BIG) jointly chaired by DAFM and DCCE met three times in 2022 providing a coordination structure bringing together Departments and Agencies on a planned and regular basis. To further progress bioeconomy development, a Bioeconomy Action Plan Consultation and Discussion Document was issued in late 2022 to gather stakeholder feedback to inform aspects of the Action Plan, ensuring it is effective and achievable.

The bioeconomy forum, chaired by John Malone, met three times in 2022 providing a consultative approach to bioeconomy policy development. The chairperson and the forum secretariat held numerous bilateral meetings and three workshops with the forum members on bioeconomy and education, training & skills, regulation, funding and finance. The forum also undertook a site visit to examine the 'bioeconomy in action' through the development of a climate neutral farm, Farm Zero C. The forum chairperson provided a report to the Bioeconomy Implementation Group in Q2 2022, reflecting the feedback received based on the first year of the forums two-year term and feeding into the generation of the Bioeconomy Action Plan.

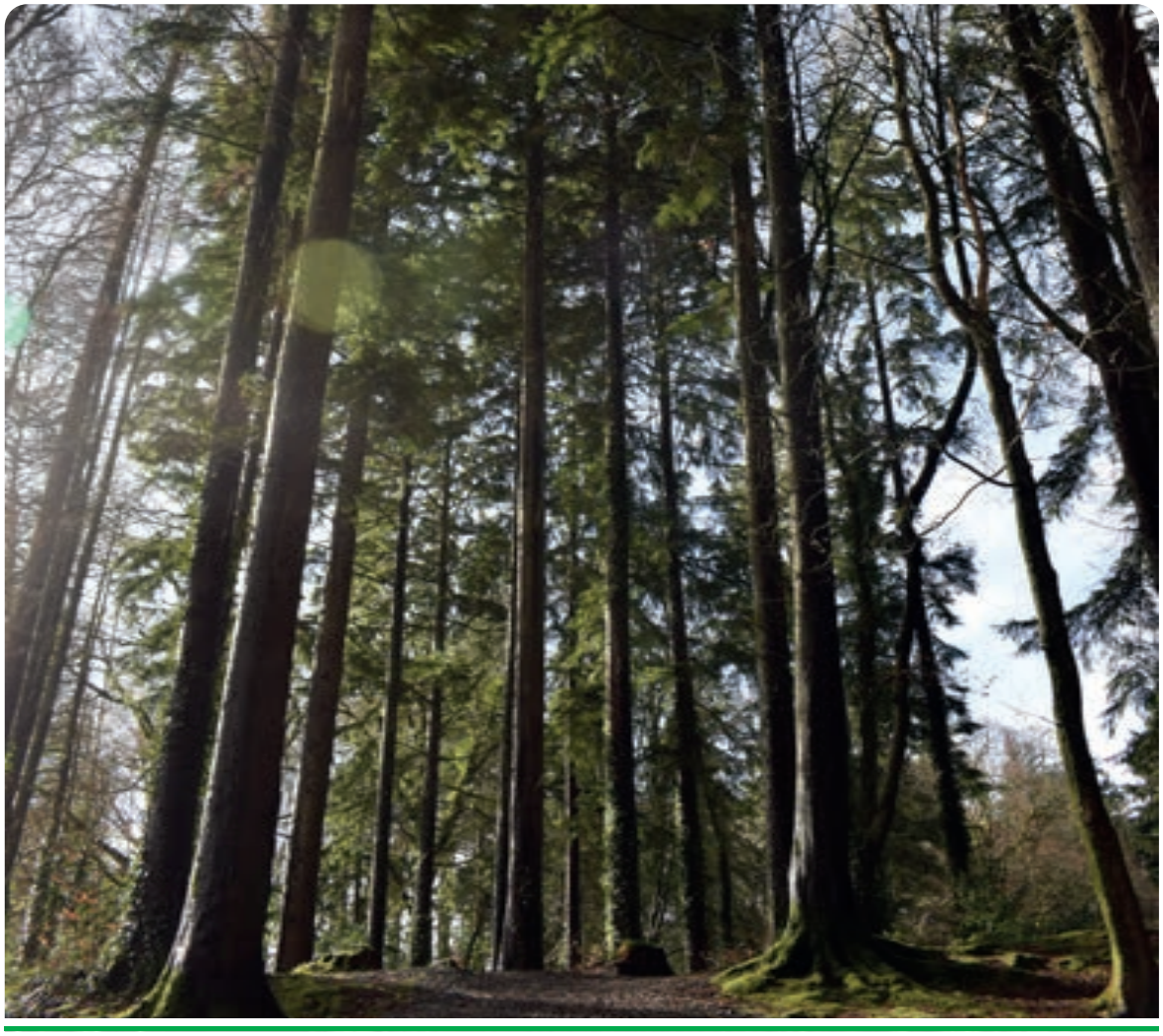
Bioeconomy Research

The annual Bioeconomy Ireland Week took place during October 2022 and this was launched at DAFM's Backweston Campus, with over 118 delegates from across Ireland's bioeconomy in attendance. The launch event involved a Bioeconomy Research Symposium that highlighted the investment of €25 million by DAFM in research supporting the development of Ireland's bioeconomy. The main output of the event was a DAFM Bioeconomy Research Symposium Poster Booklet identifying all the research projects.

DAFM offered national co-funding opportunities for the bioeconomy under the Policy and Strategic Studies Research Call (PSSRC), the US-Ireland Programme and the SEAI RDD Programme in 2022. In addition, DAFM also continued to promote and support Irish participation in the EU funded Circular Biobased Europe Joint Undertaking (CBE JU). This involved hosting an online event in conjunction with InterTrade Ireland and Department of Agriculture, Environment and Rural Affairs of Northern Ireland while also supporting initial development of North/South proposals under the CBE JU call. One coordinated application was supported and overall, Ireland successfully drew down approximately €3 million in the 2022 call.

Bioeconomy Piloting and Demonstration

In February 2023 DAFM announced a €3 million investment in an integrated anaerobic digestion and green biorefining demonstration initiative. The funding was jointly awarded to University College Dublin (UCD) and Munster Technological University (MTU) for the further development of climate neutral farming as part of the Farm Zero Carbon research project currently being undertaken on the Shinagh Estates Demonstration Farm in West Cork.



Bioeconomy Communication

The Bioeconomy Implementation Group also coordinated Bioeconomy Ireland Week in October 2022, which saw a series of online events involving a range of partners such as Teagasc, BiOrbic Bioeconomy Research Centre, Munster Technological University, Shannon ABC, the Circular Bioeconomy Cluster Southwest and the Irish Bioeconomy Foundation.

Outlook

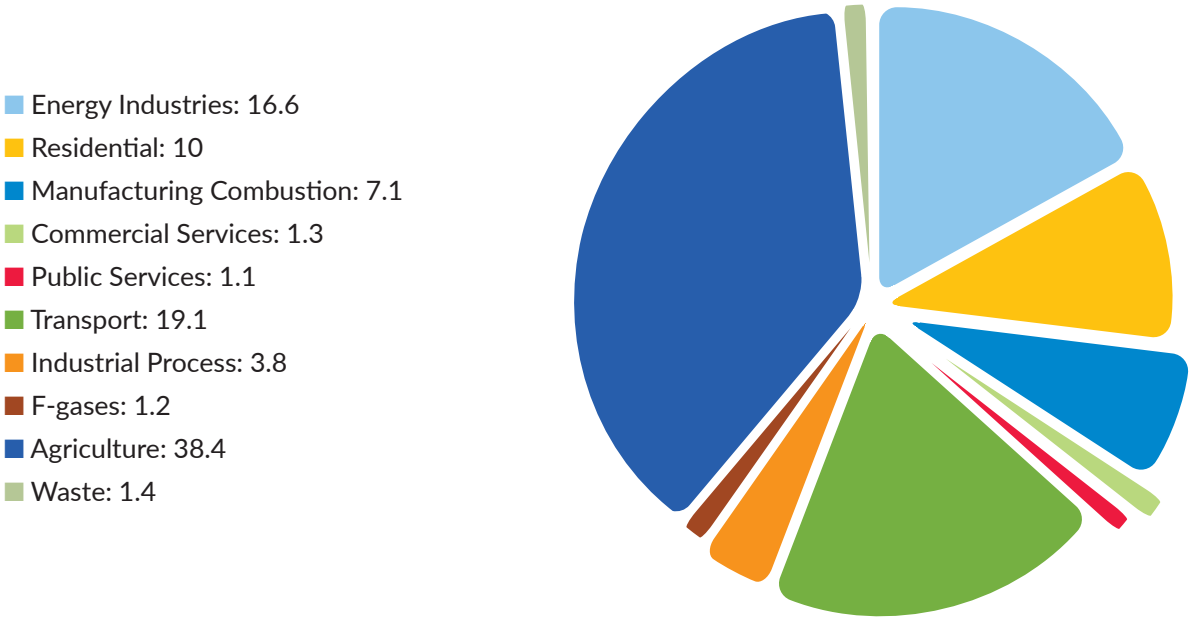
The bioeconomy offers a holistic approach for cross-sectoral climate policy and action that complements current sectoral approaches to climate action. A Bioeconomy Action Plan will be launched in the second half of 2023 setting out new pillars for bioeconomy development and key priorities that will catalyse action inside and outside of government to advance the Irish bioeconomy.

Bioeconomy piloting and demonstration will also be supported through the EU Just Transition Fund. Bioeconomy Research will be supported through a range of funders including through the DAFM Thematic Research Call.

8.5 Greenhouse Gas Emissions and Air Quality & Targets

According to the latest emissions data from the Environmental Protection Agency (EPA) issued in July 2023, Ireland's GHG emissions in 2022 are estimated to be 60.76 million tonnes carbon dioxide equivalent (Mt CO2eq), which is 1.9% lower than emissions in 2021. This follows a 5.1% increase in emissions reported for 2021. Emissions are 4.6% below pre COVID, 2019 figures. In 2022, the energy industries, transport and agriculture sectors accounted for 74.1% of total GHG emissions.

Figure 8.1 *Greenhouse Gas Emission share by sector in Ireland 2022*

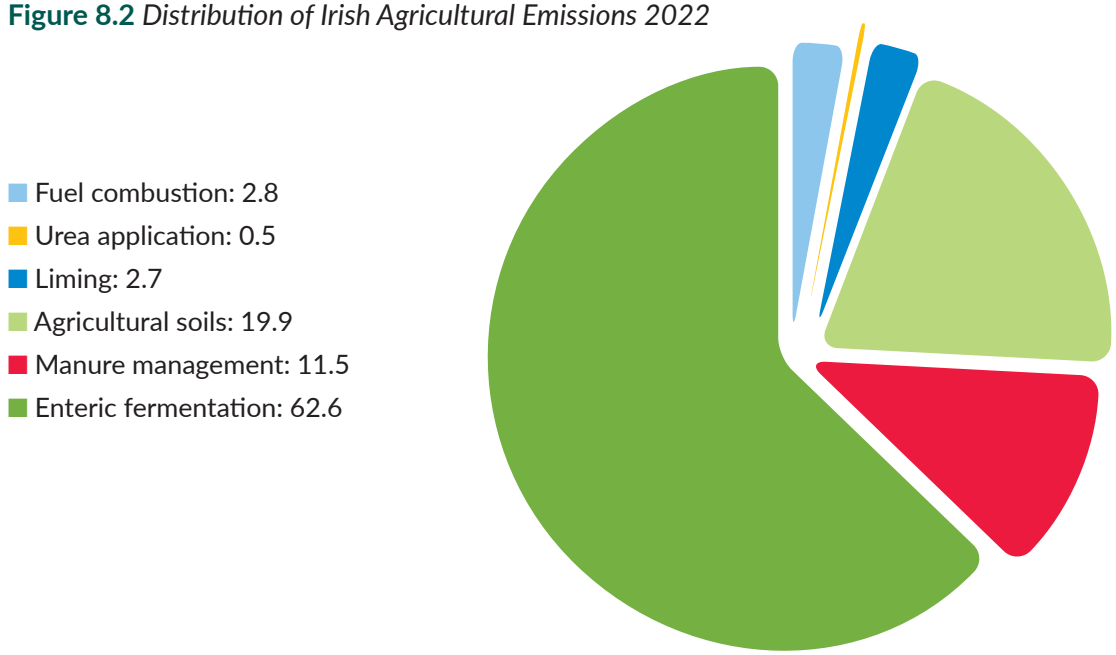


Source: *EPA*

Agriculture emissions in 2022 decreased by 1.2% or 0.29 Mt CO2eq, compared to 2021 figures. This reduction was based on a 14% decrease in nitrogen use, despite a 0.9% and 0.7% increase in cow numbers and milk production. Red and white clover, in addition to other multispecies swards being established on livestock farms, played a role in the reduction.

With the continued use of these actions and the increased uptake of nitrogen inhibitor based fertilisers, it is anticipated that emissions from chemical nitrogen usage will decline over the decade, which will have a positive impact on the inventory. In addition, increased uptake in the use of low emissions slurry spreading technology and its continued funding under the Targeted Agricultural Modernisation Scheme (TAMS) will also reduce chemical nitrogen demand.

Figure 8.2 *Distribution of Irish Agricultural Emissions 2022*



Source: *EPA*

The Gothenburg Protocol and NEC Directives

Ireland is a Party to the Convention on Long Range Transboundary Air Pollution (CLRTAP) under which certain transboundary air pollutants, such as ammonia, are controlled. As a Party to the United Nations Economic Commission for Europe Convention (UNECE) on CLRTAP, Ireland is required to annually report emission data for a wide range of air pollutants and other substances released into the atmosphere. As a member of the EU, implementation of the Gothenburg protocol (a daughter protocol of the CLRTAP) is achieved through limits set out in the National Emissions Ceilings Directive (NECD) 2001/81/EC, subsequently updated in 2016 by Directive 2016/2284.

The NECD sets maximum emission ceilings for each Member State per year for the five main pollutants namely (i) fine particulate matter (PM2.5), (ii)sulphur dioxide, (iii)nitrogen oxides, (iv) non-methane volatile organic compounds and (v)ammonia. In terms of ammonia, Ireland must comply with the targets set out within the NECD. Beginning in 2020, the NECD set out new national emission reduction commitments for each EU Member State for the years 2020 to 2029 and 2030 onwards. Ammonia emissions must be reduced by 5% below 2005 levels from 2030 onwards.

Irelands current National Air Pollution Control Programme (NAPCP) was submitted to the European Commission in March 2021. The NAPCP is a technical document which outlines the pathway Ireland will follow to achieve compliance with its commitments under the NECD.

8.6 International Affiliation

The Koronivia Joint Work on Agriculture (KJWA) process was initiated at COP23 in November 2017 under the United Nations Framework Convention on Climate Change (UNFCCC). It currently represents the most important international platform to discuss agriculture issues in relation to climate policies. Decision 4/CP.23 – Koronivia Joint Work on Agriculture officially acknowledges the significance of the agriculture sectors in adapting to and mitigating climate change. The member countries to the UNFCCC agreed to work together to make sure that agricultural development ensures both increased food security in the face of climate change and a reduction in emissions. The joint work will address six topics related to soils, nutrient use, water, livestock, methods for assessing adaptation, and the socio-economic and food security dimensions of climate change across the agricultural sectors.

This work was to be carried out through workshops and expert group meetings. The timeframe for completion of the work of Koronivia as set out in the original decision has now run out and agreement was sought at COP27 in Egypt on the future work to be undertaken.

In Egypt the Subsidiary bodies continued their consideration of issues related to agriculture and a new decision was adopted by the Conference of the Parties at its 27th session, which included a new four-year work programme on agriculture and food security.

Ireland mainly participates in the Koronivia process through the EU's Interest Group for Agriculture Forestry and other Land Use IG AFOLU. The EU's position is that the work of Koronivia should continue but that the scope of the work should be expanded to examine the various aspects to "Global Food Systems Transformation".

Ireland remains committed to the sharing of scientific knowledge and the coordination of research activities as seen through our continued involvement and leadership as a member of the Global Research Alliance (GRA). The GRA was launched in 2009 and now has 62 member countries from all regions of the world. The Alliance is focused on coordinating research, development and extension of technologies & practices that will help deliver ways to grow more food (and more climate-resilient food systems) without increasing greenhouse gas emissions.

Ireland brings a wide range of experience and knowledge to the GRA with representation from the DAFM, Teagasc and the EPA. The broad contribution of researchers and representatives from these organisations reflects Ireland`s long standing reputation for efficiency in both animal and crop production.

In December 2022, in recognition of the importance and many similarities that the agricultural sector in Ireland shares with New Zealand, DAFM provided funding of over €3.6 million for Irish researchers in four climate and agriculture research projects arising from the 2022 Ireland – New Zealand Joint Research Call.

The newly established Ireland – New Zealand Joint Research Mechanism (JRM) is a pilot research initiative which is projected to run for an initial period of 3 years (2022-2024). The JRM is specifically focused on the identification of research gaps and the development of new technologies leading to a reduction in enteric methane emissions.

8.7 Highlights and Challenges

Highlights

- In July 2022 the Government announced sectoral emissions ceilings with the ceiling for agriculture by 2030 set at 17.25 CO2 eq representing a 25% cut in emissions compared to 2018.
- After two weeks in Sharm-El-Sheikh, COP27 concluded with an outcome that was disappointing on mitigation/emission reduction ambition. However, on Ireland's priority issue of Loss and Damage, supporting the most vulnerable communities and countries to deal with the worst impacts of climate change, there was a positive outcome that was stronger than many thought possible, and Ireland played an important role in making that happen. For the first time in the 30-year history of the UN Framework Convention on Climate Change, financial mechanisms, including a new fund, to respond to the Loss and Damage from the worst impacts of climate change, were agreed.

Challenges

The Climate Action and Low Carbon Development Act, published in 2021, aims to reduce total economy wide emissions by 51% by 2030 compared with 2018 levels. It also set an ambitious target to achieve net zero emissions by 2050. This increased ambition will significantly impact on all sectors of the economy, including the agriculture sector, making it even more important that the targets and specific agriculture actions in the Climate Action Plan are met and implemented effectively. Added to this at a European level is the Green Deal and the move to at least a 55% reduction of GHG emissions at EU level by 2030. Although progress is being made on the Farm to Fork, Biodiversity, and Methane Strategies further clarity is required as to how this will translate to the Effort Sharing Regulation.

8.8 Biodiversity

DAFM plays an active role in developing biodiversity policy for agriculture, translating wider environmental policy and strategies for the agricultural sector and implementing relevant environmental legislation such as the Environmental Impact Assessment (Agriculture) Regulations. DAFM works closely with other Government Departments, multi-agency working groups and steering committees to deal with a wide range of issues regarding the conservation, enhancement and promotion of biodiversity in the agricultural sector and wider environment.

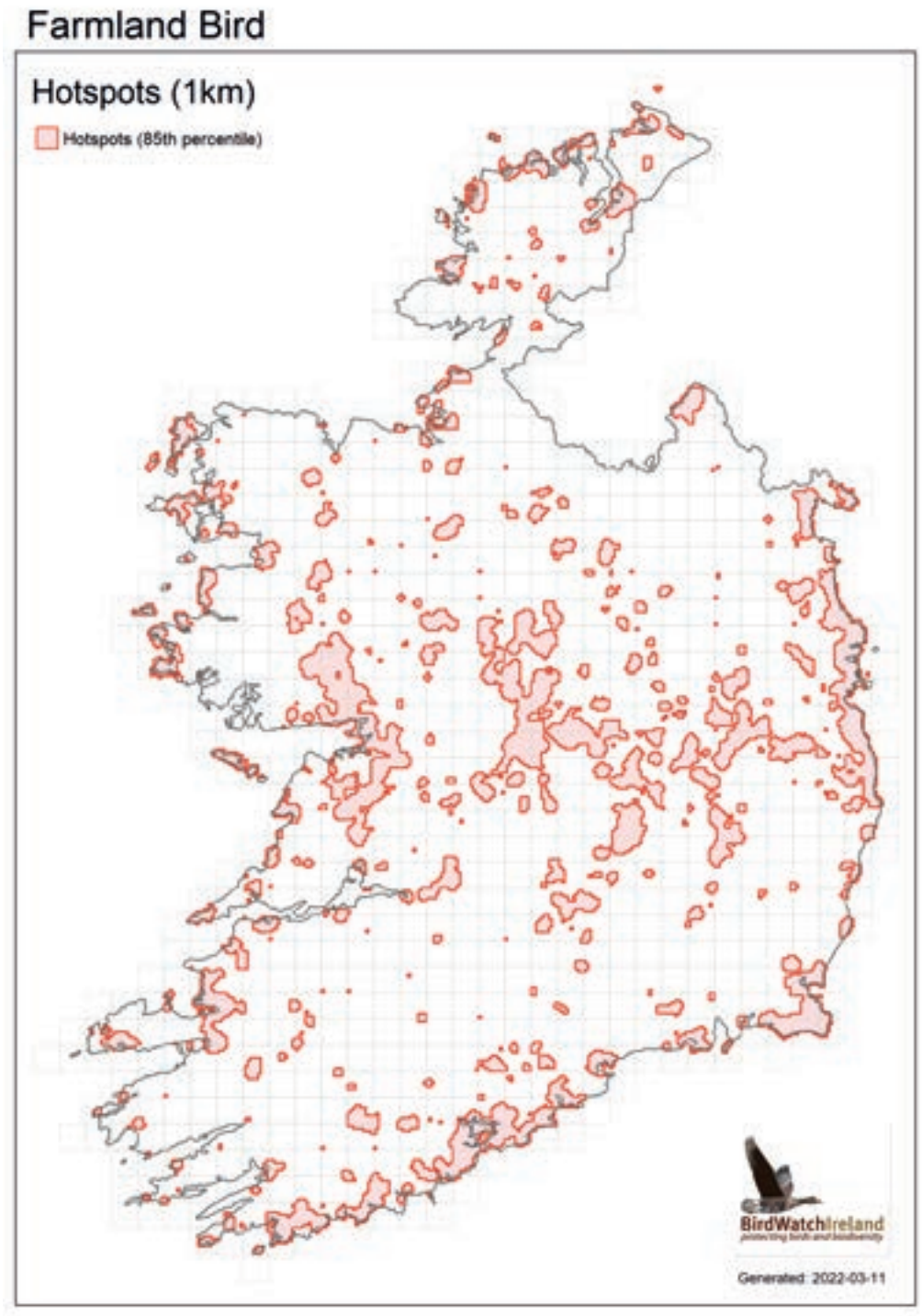
Nationally, the Department of Housing, Local Government and Heritage (DHLGH) is the Government Department responsible for natural heritage with the goal to conserve and manage Ireland's heritage. However, DAFM plays a key role by contributing to a significant number of national environmental policies and strategies led by DHLGH such as contributing to the development of the National Biodiversity Action Plan.

DAFM provides input into EU technical expert groups and negotiations on legislative instruments. The importance of this has increased in recent years as a result of increasing focus and public demand for environmental sustainability in agriculture, reflected in the EU Green Deal and associated Biodiversity and Farm to Fork Strategies. DAFM is partaking in ongoing negotiations on the EU Nature Restoration Regulation and the forthcoming EU Soil Monitoring Law. Representatives from DAFM also contribute to EU technical expert groups, including EU CAP Network Thematic Group on Landscape Features and Biodiversity, the EU Working Group on Pollinators and the EU Soil Expert Working Group. To support the development of scientific and technically robust policy, DAFM provides financial support to small scale studies which can deliver relevant outputs that support our role as policy advisors/developers. An example of such support is the BirdWatch Ireland Farmland Bird Hotspot Mapping Project which was co-funded by DAFM and The Heritage Council.

Case Study

Farmland Bird Hotspot Mapping

In 2021, DAFM and the Heritage Council, co-funded BirdWatch Ireland data analysis project of farmland birds. BirdWatch Ireland gathered 29 existing datasets of bird records which contained 2.5 million observations, of which 130,000 scientifically validated records were extracted. This data related to 27 red and amber listed birds of conservation concern. Records within the datasets were scored and weighted to produce maps highlighting significant locations for these species which are reliant on farmland. Figure 1 is the primary hotspot map produced.



Case Study

From the primary analysis, it is possible to generate species or group of species specific maps, such as the example in Figure 2 for breeding waders. The two images reflect the fact that nationally, hotspots can vary depending on the target species or group of species under consideration.

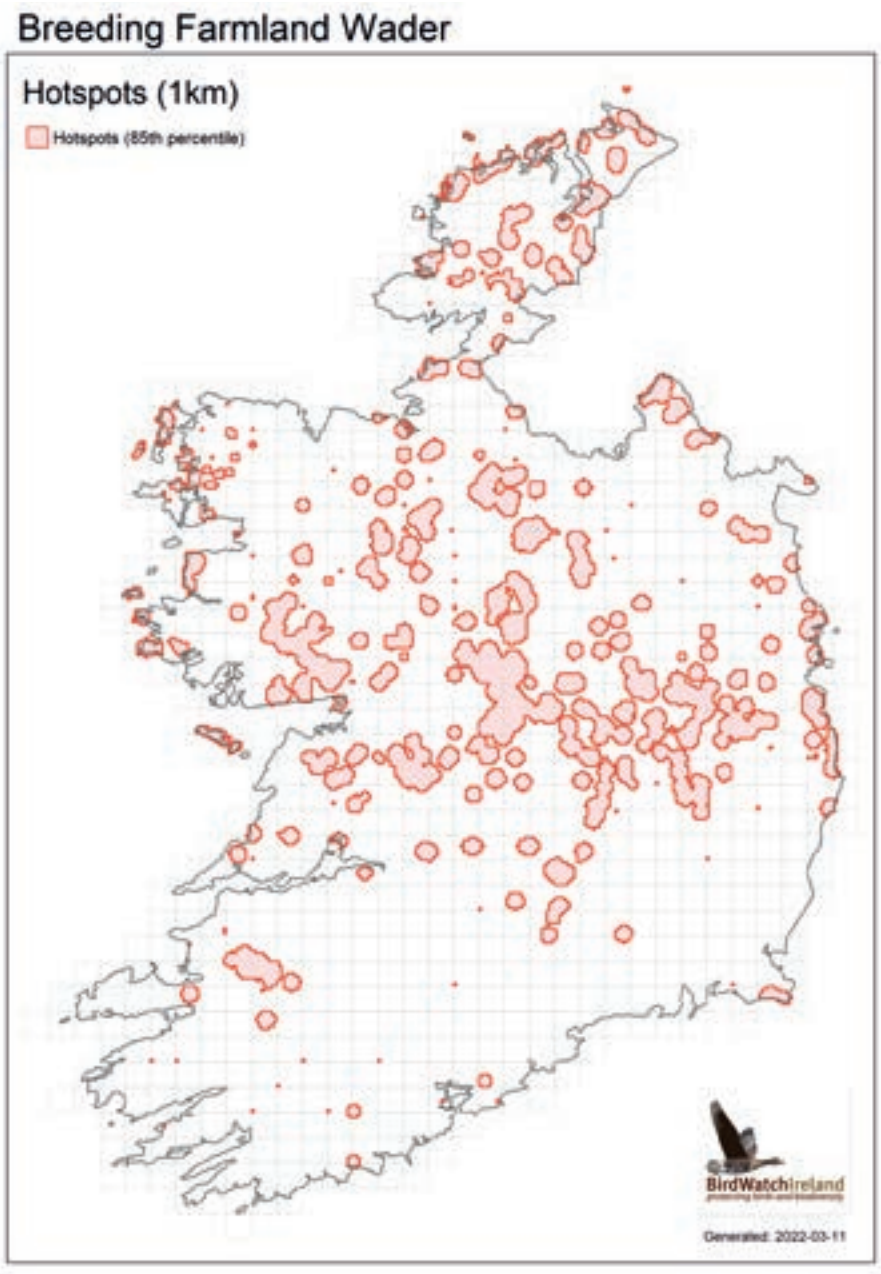


Figure 2 *Breeding Farmland Wader Hotspots at 1km resolution*

The outputs of this analysis were used in 2022 to inform selection procedures for the national agri-environment scheme "ACRES". Breeding wader and Geese and Swans hotspot maps were used for identifying Tier 1 priority areas. The information was also used to optimise delivery of actions in ACRES, for example, individual datasets were used for information purposes on mapping systems used by agricultural advisors to identify beneficial areas for certain actions such as grass margins and winter bird food strips.

Environmental Impact Assessment (Agriculture) Regulations

The Environmental Impact Assessment (EIA) (Agriculture) Regulations were introduced in 2011 and were amended in 2013 and 2017. The Regulations apply to three different types of on-farm activities and provide for an assessment of the environmental impact of certain projects before they can proceed. The thresholds for screening applications are:

- Restructuring of rural land holdings
  - Length of field boundary to be removed above 500 metres, or
  - Field size greater than 5 hectares following removal of field boundaries, or
  - Recontouring (within farm holding) of an area above 2 hectares.
- Commencing to use an area above 5 hectares of uncultivated land or semi-natural areas for intensive agriculture.
- Land drainage works in lands used for agriculture above 15 hectares.

Screening is also required in the following circumstances:

- If the proposed activity may have a significant effect on the environment.
- If the proposed activity is within, is near, or may affect, a proposed Natural Heritage Area or nature reserve.
- If the proposed activity is identified as 'requiring consent' or is a 'notifiable action' in a European site (Special area of conservation (SAC) or Special Protected Area (SPA) or National Heritage Area (NHA).
- If the proposed activity may have an impact on an archaeological monument.

In addition to screening, there are thresholds where mandatory Environmental Impact Assessment (also referred to as Consent) is required, which include restructuring by removal of field boundaries above 50 hectares or 4 kilometres, re-contouring (within farm-holding) above 5 hectares, commencing to use uncultivated land or semi-natural areas for intensive agriculture above 50 hectares and land drainage of any lands used for agriculture above 50 hectares.

Where a landowner intends to undertake any of these activities, and the proposed works exceed the threshold for screening as set out in the Regulations, then there is a requirement to submit a screening application to DAFM for screening approval before any works can proceed. All screening applications are assessed by DAFM ecologists and inspectors to assess the criteria set out under Article 8 of the Regulations. If the application is rejected for screening the applicant can then apply for consent.

A review of the Environmental Impact Assessment Regulations commenced in quarter two 2023, with a view to updating the regulations.

LIFE programmes

The LIFE Programme is the EU's funding instrument for the environment and climate action. DAFM are an associated beneficiary to several LIFE programmes currently in action in Ireland. A number of the projects have biodiversity and/or water quality as a primary focus. DAFM suport these projects in the form of development of results based or knowledge exchange elements, contributions to steering and working groups and additional inputs as required for such projects. Among the current list of projects which have biodiversity and/or water quality as a primary focus are:

- Wild Atlantic Nature LIFE IP
- Corncrake LIFE
- LIFE on Machair
- Lough Cara LIFE
- Waters of LIFE
- LIFE Peatlands and People

Pollinators

In response to the current threat to our pollinators, and the importance of their role for agriculture, DAFM is taking a proactive approach to support pollinators through policy development and increasing awareness among farmers and the general public.

DAFM has been fully supportive of the EU Pollinator Initiative which was adopted in 2018. It set out strategic objectives and a set of actions to be taken by the EU and its Member States to address the decline of pollinators in the EU and contribute to global conservation efforts. The initiative has been an integral part of the EU biodiversity strategy. It is also fully supportive of the revised Pollinators Initiative objectives set for 2030.

Irelands' All-Ireland Pollinator Plan (AIPP) is implemented by the National Biodiversity Data Centre with joint funding from several stakeholders including DAFM. In publishing the All-Ireland Pollinator Plan (AIPP) in September 2015, Ireland became one of the first countries in Europe to address this issue. The second All-Ireland Pollinator Plan 2021-2025 builds on the first plan by providing a further road map that aims to provide further help for bees, other pollinating insects and our wider biodiversity. DAFM is providing funding for the role of a Farmland Pollinator Officer to support the implementation of farmland actions under the Plan.

Monitoring of bee and pollinator populations is key to their conservation and to the design of successful actions to improve population trends. The need for improved monitoring forms a key part of the EU Pollinators Initiative and Ireland is one of the leading countries in this area with a Pilot National Monitoring Scheme in place. Ireland's Pilot National Pollinator Monitoring Scheme was launched in July 2021 and is jointly funded by DHLGH and DAFM with the implementation coordinated by the National Biodiversity Data Centre (NBDC). The aim of the Pilot National Monitoring Scheme is to detect status and trends of wild pollinators. During 2022 monitoring took place at 36 sites including farmland sites.

As part of the EIP funding stream under the Rural Development Programme, DAFM awarded funding to the Protecting Farmland Pollinators EIP. This National Biodiversity Data Centre-led project, which began in 2019, will be completed in 2023. The project aims to develop a flexible mechanism that encourages all farmers to make their whole-farm more pollinator friendly in a way that is measurable and will not impact agricultural productivity.

Under EIP call five, two further Pollinator EIPs were funded for 2021-2022. The Great Yellow Bumblebee project and The Farmer Moth Monitoring EIP.

The Department is currently an associated beneficiary in a number of EU LIFE projects that focus on the conservation of threatened habitats and species, through which pollinators benefit from habitat improvement. The LIFE on Machair project in particular has a pollinator focus.

Pilot National Soil Sampling and Analysis Programme

The pilot National Soil Sampling and Analysis Programme was launched in late 2021. The objective of the programme is to develop a baseline national dataset at farm level for macro and micronutrients and a soil pathogen assessment. This pilot is also examining soil carbon levels which will guide future actions and could support carbon farming.

The €10 million pilot programme is co-funded by the EU and the national exchequer under the Rural Development Programme (RDP) 2014-2022. A further €10m is committed for 2023 for this ambitious programme.

Farmer participation in the pilot Programme was voluntary and open to all farms that submitted a 2021 BPS application. Applicants were accepted on a first come, first serve basis ensuring maximum spread over geographic regions and farm enterprise types.

Approximately 7,800 farmers and partnerships were notified of acceptance into the programme in November 2021, with soil sampling and the associated analysis commencing thereafter. Work under the pilot programme was completed in early 2023. The pilot is intended to inform a further roll out of the measure in 2023.

Information about our soils will provide opportunities for environmental and climate balance and is the foundation for natural and agricultural systems to achieve both economic and environmental sustainability. The results from the programme will assist farmers, advisors and policy makers in applying the 'right measure, right place, right time' approach to reaching our overall goals.

Pilot National Farm Environmental Study (FES)

The pilot Farm Environmental Study (FES) measure will begin the process of developing a national baseline database of farm-scale habitat and biodiversity data along with additional environmental parameters. This measure was launched in late 2021 and over 6,300 applicants were approved for the measure in 2022. The information gathered will enhance farmer knowledge of habitat and biodiversity on their farms, while also providing information to DAFM which could be used to target future Agri-environment and Climate Measures as part of the next Common Agricultural Policy. This €5 million pilot Programme is co-funded by the EU and nationally under the Rural Development Programme (RDP) 2014-2022.

Pilot Multi-species Sward Measure

Research has shown that multi-species swards can have a positive impact from a climate, biodiversity, and water quality perspective, as well as supporting improved livestock productive efficiency, while also reducing dependence on expensive chemical nitrogen.

Building on the increased interest in multi-species swards, and to capitalise on their climate and environmental benefits, provision was made in budget 2022 for a pilot Multi-Species Swards Measure which was launched in March 2022.

The pilot Multi-Species Sward Measure was operated through Agri-retailers/Co-ops who discounted the price of the approved multi-species seed mix by €50/bag and were then re-

imbursed by DAFM. The pilot programme facilitated establishment of an additional 4,400ha of multi-species swards during 2022. This was a significant achievement given the overall increase in input and reseeding costs during 2022, as well as a significant summer drought which affected certain areas of the country.

Further funding of €1.5m has been provided in budget 2023 for the Multi-species Sward measure to expand the area already established in the pilot programme. The measure opened in spring 2023, with a payment rate of up to €300/ha.

An action relating to establishment of multi-species swards is also included as an Eco-Scheme option applicable under the CAP Strategic Plan from 2023.

Pilot Red Clover Silage Measure:

Red clover is a high yielding legume which converts atmospheric nitrogen into a plant usable form. Due to its nitrogen fixing ability, red clover silage is higher in protein than conventional silage and, combined with its ability to yield over 14 tonnes of dry matter per hectare, should allow farmers to reduce their concentrate feed costs while also reducing their chemical fertiliser costs and greenhouse gas emissions.

The Pilot Red Clover Silage Measure was launched in spring 2022. Similar to the pilot Multi-Species Swards Measure, the measure was operated through Agri-retailers/Co-ops who discounted the price of a 12kg bag of the approved red clover seed mix by €50/bag. The Agri-retailers/Co-ops were then re-imbursed by DAFM.

Based on a standard seeding rate of 30kgs per hectare, approximately 3,200 hectares was sown under the Pilot Red Clover Silage Measure in 2022. This represented an almost 400% increase on the cropping area of 787 hectares declared by farmers as red clover in 2021.

Further funding of €1million has been provided in budget 2023 for the Red Clover Silage Measure and the measure was opened in Spring 2023.

Liming Programme.

Funding of €8 million was announced for a National Liming Programme as part of budget 2023. The Liming Programme was introduced by DAFM to incentivise the use of ground limestone which acts as a natural soil conditioner that corrects soil acidity by neutralising the acids present in the soil. This in turn allows for an improvement in the overall health of the soils. Currently a significant proportion of Irish soils have a sub-optimal pH and soil protection is an important aspect of the Department's policy. Research has also shown that liming can release nitrogen (N), phosphorous (P) and potassium (K) in the soil, thereby reducing the requirement for chemical fertilisers.

The Liming Programme 2023 was opened in spring 2023, with almost 41,000 applications received seeking support in respect of over 4.5 million tonnes of lime.

Results-Based Schemes

Land used for agriculture covers approximately 64% of the land area of the Republic of Ireland. Many species of plants and animals rely on low-input agricultural management. The parallel processes of agricultural intensification and abandonment in the Irish landscape in the 20th century has resulted in a steep decline in farmland biodiversity. Balancing food security and sustainability, while minimising agriculture's negative environmental impact is one of the greatest challenges faced by Ireland, and agriculture globally.

The Common Agriculture Policy (CAP) provides a policy framework for agriculture in Europe and is the largest source of funding for nature conservation in the EU. In particular, Pillar Two of the CAP requires the implementation of agri-environment schemes. However, the effectiveness of such schemes when applied through a prescription-based, short-term, untargeted and unmonitored model has been questioned. The new CAP programme (2023-2027) calls for greater consideration and inclusion of environment and climate priorities throughout Member

States' interventions. It also shifts the focus from prescription-based to result-based approaches to drive environmental improvements.

The key element of results-based methodologies regarding biodiversity is that the financial support paid to the farmer reflects the quality of biodiversity that is being delivered. This facilitates a key shift in the perception of farmland biodiversity, focusing on purposefully produced environmental outputs, alongside food production, rather than considering biodiversity as an occasional coincidental by-product.

The European Innovation Partnership (EIP) Scheme, financed through Ireland's Rural Development Programme, supports innovation, competitiveness and sustainability in agriculture and forestry. Several of the EIP programmes currently active in Ireland are based on a results-based model.

The EIPs are locally-led, farmer-centred, results-based and adaptable. These principles are considered to be the key to their successful engagement and delivery to date. The success of these programmes and similar programmes such as RBAPS (Results Based Agri-environmental Payment Schemes) and EU LIFE funded projects, including the Corncrake LIFE project and Wild Atlantic Nature programme, has resulted in a significant commitment from DAFM to implement the results-based approach at a national scale.

The Results Based Environment Agri Pilot Programme (REAP) was launched during 2021. REAP is a pilot project that provides financial supports to farmers to maintain and improve the environmental condition of their land using a results-based scoring system to indicate payment rates. Building on this, Ireland's CAP Strategic Plan (2023-2027), introduced results-based elements as part of the new national scale Agri-Climate Rural Environment Scheme (ACRES). This will see implementation of a results-based approach across eight ACRES Co-Operative Project areas, and through targeted actions in ACRES General areas. These actions will build on the learnings of the EIPs and use a habitats-based approach to contribute significantly to long-term environmental improvement.

8.9 Water Quality

Nitrates and Nitrates Derogation

The Department of Housing, Local Government and Heritage (DHLGH) is the lead authority for the Nitrates Regulations. The set of measures in these regulations provides a basic level of protection against possible adverse impacts to waters arising from agricultural sources. In March 2022, S.I. 113 of 2022, the European Union (Good Agricultural Practice for the Protection of Waters) Regulations 2022 (as amended) was signed by the Minister of Housing, Local Government and Heritage giving effect to Ireland's 5th Nitrates Action Programme. This Programme runs to 2025 and in response to recent declines in Irish water quality, includes a number of new measures, expanded measures and measures to improve overall compliance with the Nitrates Regulations. An interim review of the Nitrates Action Programme will take place in 2023.

Under the Regulations the amount of livestock manure applied in any year to land on a holding, together with that deposited to land by livestock, shall not exceed 170kg of nitrogen per hectare, and the amount applied to commonage land shall not exceed 50kg of nitrogen per hectare. Farmers who apply for a Nitrates Derogation can farm to a higher limit of 250kg of nitrogen per hectare, subject to additional conditions. These regulations are applicable on a whole State basis.

In March 2022 Ireland secured an extension to its Nitrates Derogation covering the period 2022-2025. The Nitrates Derogation is an important facility for intensively stocked farms as it allows them, subject to additional environmental conditions, to farm up to 250kg livestock manure nitrogen per hectare. However, the EU Commission Implementing Decision granting Ireland its current Nitrates Derogation also includes additional conditionality which includes the need for Ireland to conduct a 2-year water quality review in 2023. Following this review the derogation limit is due to reduce to 220 kg/hectare on 1 January 2024 in certain areas, because the latest water quality results have not shown sufficient improvement.

In 2022, a total of 6,812 farmers made an online application for a Nitrates Derogation. This figure is expected to increase in light of changes in the nutrient excretion rates assigned to dairy cows with effect from January 2023.

Nitrogen and Phosphorus (N&P) Data 2022

The Department's online system, www.agfood.ie, provides farmers with detailed N&P statements, reflecting "cattle only" stocking rates on their holding. Statements are available online for the latter part of the year, allowing farmers to monitor their nitrate levels in order to comply with the regulatory limits. Text messages also issue periodically to farmers that have relatively high stocking rates for the time of year.

An online system is now used to record movements of organic manure between holdings. The system has replaced the 16,000 paper forms previously submitted by farmers annually and brought several other key benefits. These include simplifying the system of reporting of movements, introducing importer verification of movements and, importantly, also giving farmers access to prompt information on their compliance with the nitrates limits where they are exporting or importing livestock manure. In 2023, work is planned to continue to enhance and further develop this system to assist farmers comply with the regulations.

Agricultural Catchments Programme and the Agricultural Sustainability Support & Advisory Programme

The Agricultural Catchments Programme (ACP) is in place since 2008 and is used to evaluate the impact of Ireland's Nitrates Action Programme (NAP) and the Nitrates Derogation which are implemented under the Nitrates Directive. This Programme has been funded by DAFM and has been delivered by Teagasc since its inception.

Phase 4 of the ACP (2020-2023) commenced in January 2020 and includes research on greenhouse gases (GHG), and carbon sequestration. This expansion was both relevant and vital for DAFM in the context of the Climate Action Plan 2021.

The Agricultural Sustainability Support & Advisory Programme (ASSAP) is also now included in the ACP. ASSAP is an innovative collaborative initiative supported by DAFM, DHLGH and industry to achieve farmer behavioural change regarding the protection of water to meet the Water Framework Directive's objectives. The ASSAP has been set up to provide free advice and support to farmers to assist them to comply with the Nitrates Regulations, provide solutions for critical source areas and to improve water quality.

This is an innovative approach to achieving improvements in water quality and supports the goals of Food Vision 2030, facilitating better productivity and a more sustainable sector. This is being achieved by advisors working with farmers, focusing on improved nutrient management, with more targeted use of fertiliser, better farmyard practice and appropriate measures for identified critical source areas. Over time, more widespread sustainability approaches developed by Teagasc will be implemented focusing on climate change and biodiversity.

ASSAP represents a whole-of-Government, whole-of-sector approach to provide direct advice to farmers in 190 areas-for-action for the protection and improvement of water quality. Thirty sustainability advisors were assigned to this programme initially, of which 20 were funded by the Government and 10 by the Dairy Co-ops. The industry element of the programme expanded signficantly during 2022 with in excess of 20 ASSAP advisers being funded by industry in early 2023. This figure is anticipated to increase further during 2023. The ASSAP advisors are working within a unified partnership structure which encompasses Teagasc, the Dairy Co-ops and LAWPRO, the Local Authorities Water PROgramme.

Other Measures to Protect Water Quality

Several water quality related measures are included in Ireland's CAP Strategic Plan (CSP). Applicable from 2023, enhanced conditionality, the Pillar 1 Eco-Scheme, the Agri-Climate Rural Environment Scheme (ACRES) and especially the ACRES Co-operation Project, will all contribute to improving water quality. Other measures within Ireland's CSP such as the Organic Farming Scheme, the Capital Investment Scheme and a specifically themed European Innovation Partnership (EIP) call to address water quality will also contribute to protect water quality.

Outside the CAP Strategic Plan, DAFM is also providing funding to the value of €800,000 in total over the period to 2028 for the Waters of LIFE Integrated Project. This project started in 2019 and was due to finish in 2026 but due to delays, it is now scheduled to finish in 2028. This DHLGH-led Integrated Project aims to support the implementation of measures to protect and enhance high-status waters in Ireland. This will be a catchment scale demonstration project to test and validate the effectiveness of implementing locally tailored best practice measures across a range of landscape and land use management activities including agriculture.

The measures outlined above will all complement regulatory requirements under the new Nitrates Action Programme (2022-2025), as well as the 3rd Cycle River Basin Management Plan which is due to be finalised in 2023.

8.10 Organic Farming

Organic farming is a sustainable production system. It provides the opportunity of an alternative farming system based primarily on balancing inputs and outputs in a 'closed' system. Increased consumer awareness of food safety issues and environmental concerns has contributed to the growth in organic farming over the last few years.

Organic farming requires: the consideration and application of production methods that do not damage the environment; a more respectful use of the countryside; concern for animal welfare and the production of high-quality agricultural products. It is a farming system which relies on crop rotations, the recycling of farm-produced organic materials, that is, crop residues, animal manure, legumes, green manure and off-farm organic wastes and on a variety of non-chemical methods for the control of pests, diseases and weeds. Synthetically compounded fertilisers, pesticides, herbicides, growth regulators and livestock feed additives are excluded. GMO products and methods of genetic engineering are also strictly prohibited. This is a sector which has a central role to play in increasing future well-being and reducing the harmful effects of the climate and biodiversity crises.

Organic Standards

A major factor that distinguishes organic farming from other approaches to sustainable farming is the existence of internationally acknowledged standards and certification procedures. The standards for organic production within the European Union are defined and enshrined in law by Regulation (EU) 2018/848 of the European Parliament and of the Council and associated secondary legislation - Implementing and Delegated Acts.

Regulation (EU) 2018/848 and its associated secondary legislation, create a framework defining in detail the requirements for agricultural products or foodstuffs bearing a reference to organic production methods. The rules not only define the methods of production for organic crops and livestock, but it also regulates the labelling, processing, inspection and marketing of organic products within the European Community and the importation of organic products from non-member countries.

In Ireland DAFM is the competent authority for regulating the organic sector and ensuring that the obligations and requirements of Regulation (EU) 2018/848 and its associated secondary legislation are maintained. EU legislation allows Member States to use private certification bodies to carry out the inspection and licensing system of organic operators. Currently two Organic Certification bodies are approved to carry out this work in Ireland, namely the Irish Organic Association (IOA) and the Organic Trust Limited (OT).

Organic Schemes Implemented by DAFM

The Organic Processing Investment grant scheme aids organic processors who wish to invest in developing facilities for the processing, preparation, grading, packing and storage of organic products. Aid is available for off-farm projects and processors who can apply for grant-aid of up to €700,000.

The Organic Capital Investment Scheme, under the umbrella of TAMS, provides support specifically for organic farmers with the aim of ensuring a regular supply of high-quality organic produce for the market. It enables farmers to apply for grant aid for investment in buildings and machinery at a rate of 60% for organic registered farmers up to maximum of €90,000. The scheme also aims to provide an incentive to eligible organic young farmers to upgrade their agricultural buildings and equipment by providing them with an increased level of support to meet the considerable capital costs associated with the establishment of their enterprises.

The Organic Farming Scheme's overall objective is to deliver enhanced environmental and animal welfare benefits and to encourage producers to respond to the market demand for organically-produced food. Under the Scheme, a farmer receives per hectare payments as well as a participation payment to cover additional administrative costs annually. The participation rate of €2,000 for year 1 of conversion, and €1,400 thereafter, is available to mitigate the cost of organic licensing and increased administration, removing what was a financial impediment to potential participants.

Table 8.1 *Organic Farming Scheme Payment Rates per Hectare*

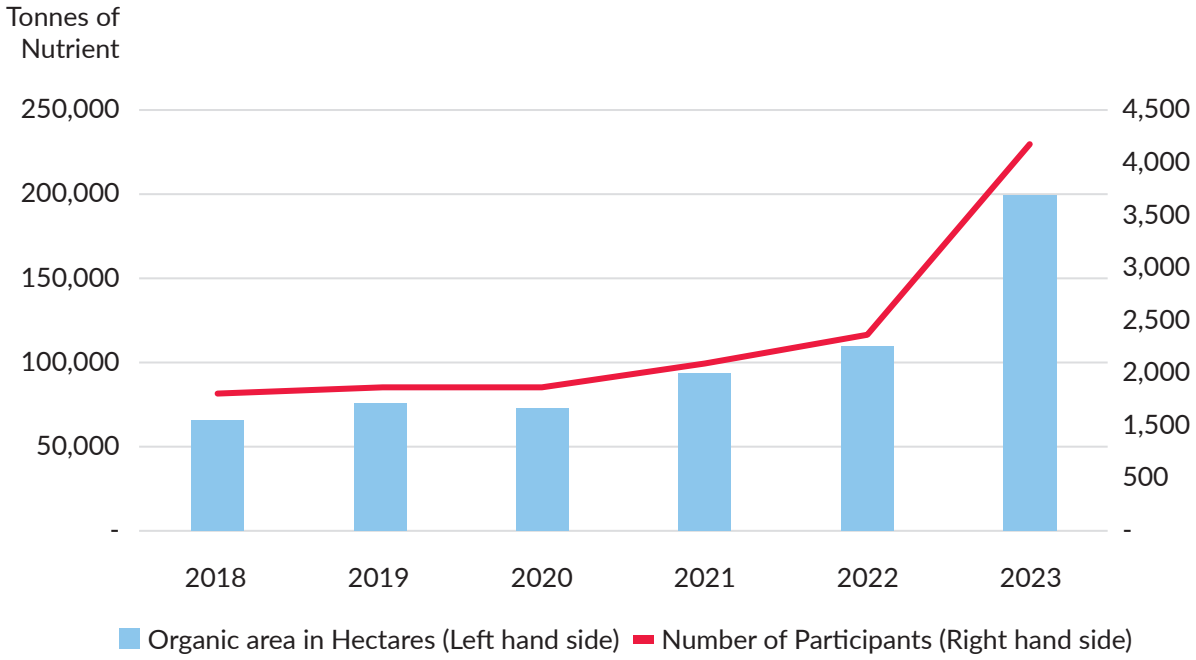
	Year 1-2		Year 3-5	
	1-70 hectares	>70 hectares	1-70 hectares	>70 hectares
Drystock	€300	€60	€250	€30
Tillage	€320	€60	€270	€30
Dairy	€350	€60	€300	€30
Horticulture	€800	€60	€600	€30

Source: *DAFM*

Policy Developments

There was a 100% increase in applications to join the Organic Farming Scheme, with a contract start date of 1 January 2023, resulting in an expected 200,000 hectares being farmed organically in Ireland. This equates to approximately 4% of the utilisable agricultural area. The Programme for Government included a target of 7.5% of land farmed organically, while the revised target under the Climate Action Plan is to achieve 10% by the end of 2030. It is proposed that the organic farming scheme will reopen in late 2023.

Figure 8.3 *Area Under Organics and Number of Participants 2018 - 2023*



Source: *DAFM*

National Organic Strategy

The implementation of the National Organic Strategy 2019-2025 continues apace. It sets out ambitious growth targets for the sector by aligning it closely with the market opportunities.

Bord Bia have appointed a dedicated Organic Sector Manager and they are currently undertaking work to bring clear definition to the value proposition of organic food. This messaging will form the basis of agreed consumer campaigns to build awareness and understanding of Irish organic food during the second half of 2023.

For the years 2023 – 2027 an allocation of €256 million under the new CAP Strategic Plan will continue the development and growth of the organic sector.

DAFM has provided funding to the Agricultural Consultants Association to increase advisory support in the sector. Teagasc are also committed to continuing their support of organic farming through their advisory service, which will ensure farmers have access to professional advice to aid in the important decision-making process.

The Organic Strategy Forum was established by Minister of State Pippa Hackett and tasked with developing a strategy for the further development of the organic sector in Ireland. The forum is comprised of a range of stakeholders including from the farming and food processing sectors, organic certification bodies and relevant state agencies. Forum members have been selected to include a broad range of expertise across all organic farming sectors, and this group will be the forum for discussion on all relevant issues to help the development of the Irish organic sector.

The priorities are to further increase participation in organic farming over the coming years to capitalise on the significant uptake recorded in 2022, Including: -

- The co-ordination of organic supplies and reducing leakage
- Developing the market for Irish organic food
- Green procurement
- Education
- Infrastructure and the capturing of accurate organic production data.

Case Study

NESC - Just Transition in Agriculture and Land Use report July 2023

The Just Transition in Agriculture and Land Use report drafted by NESC fulfils an action in Climate Action Plan 2021, to conduct research and engage on how to support climate-just transition in agriculture, informed by a Working Group chaired by Professor Thia Hennessy. Engagement among the working group highlighted a shared sense that this is a moment of opportunity, where opinions are shifting and a way forward could be within reach. The report argues that the agriculture and land use sector can increasingly be a part of the solution to addressing urgent climate change and biodiversity loss and can contribute to national objectives.

The report seeks to find ways to further support stakeholders to positively engage in constructing a sustainable future. The report argues that tackling the environmental challenge must be addressed together with the intersecting economic and social challenges, and that a just transition process focuses on transition within, not out of, agriculture. The report frames interventions to help as:

- *'low hanging fruit'* – measures that are low-cost or cost-beneficial that have positive impacts on the wider environment and are broadly positively received by farmers;
- *'uncertain measures'* – more widespread adoption would be possible if certainty provided
- *'hard-to-do'* – measures with potentially high-costs and income reductions for some farmers.

The report acknowledges the work underway and how this will provide the foundation for further progress and outlines four areas of action:

1. **Socially and Farmer-Inclusive Processes** – Dialogue and participation are central to success, with clear communication to develop a shared direction for transition.
2. **Enabling People to Benefit** – Must be opportunities led and needs to account for natural capital and ecosystem services. Need to ensure knowledge, skills and capacity is in place, provide rewards for action and address barriers to bring more coherence to transition and reduce uncertainty around opportunities for diversification.
3. **Sharing and Mitigating the Costs** – Need to have a fair distribution of costs. Should be shared across the supply chain, further research into effort-sharing mechanisms, more robust standards and certification, targeted supports to the 'hard-to-do' type of interventions and guarding against unintended consequences for the environment and communities impacted.
4. **Co-ordinating Action** – Need to co-ordinate and govern the transition to ensure it is balanced and just. Multi-level oversight, facilitating 'learning-by-doing', clear communication and development of mechanisms on scale comparable to LEADER needed.

The report makes 20 recommendations across the four areas of accelerated action needed to deliver a fair and effective transition. These point to firstly, coordinating and governing the transition so it can deliver real change in a balanced, inclusive and just way. Secondly, having socially inclusive participation is critical to ensure a fair process of transition; thirdly, action is needed to ensure that the transition can be opportunities-led; and fourthly that a fair and sustainable distribution of the effort to bring about transition is needed to ensure no one is left behind."

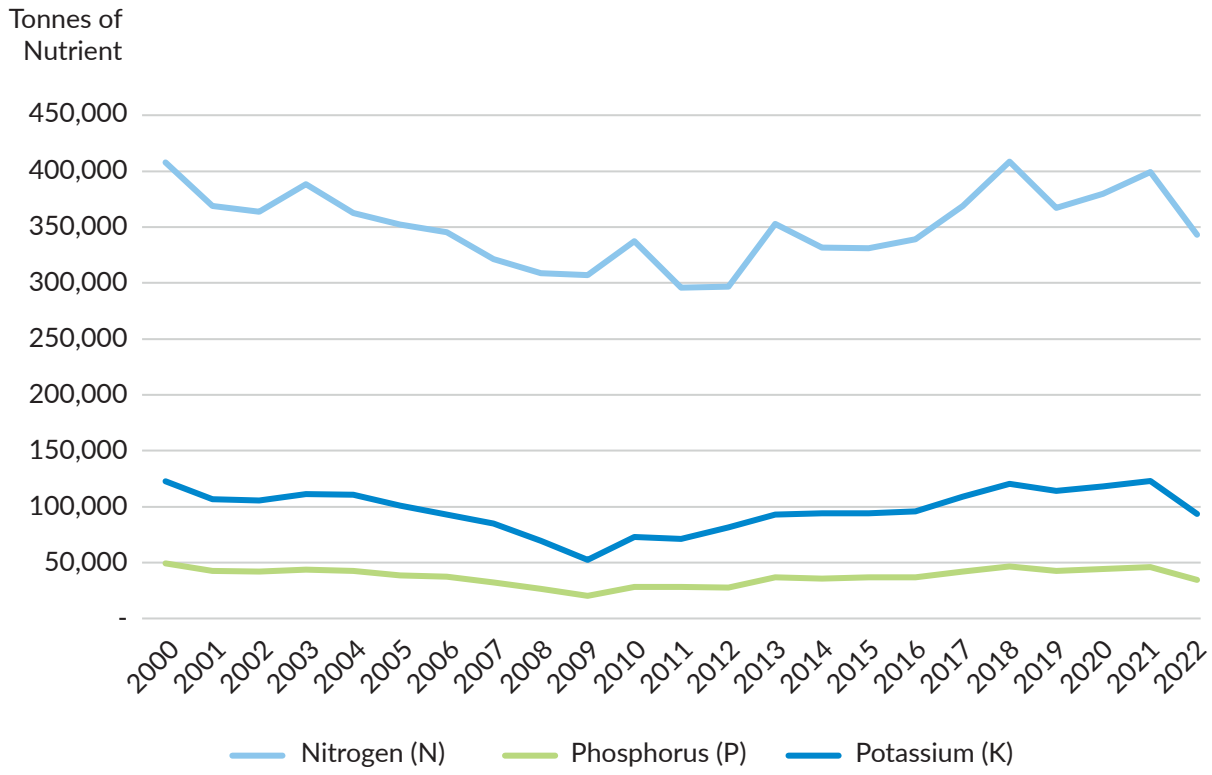
8.11 Fertiliser and Lime Sales

The CSO in recent years have issued a release containing data on mineral fertiliser sales, the nutrient content of mineral fertiliser sold in Ireland, and lime sales. The data on fertiliser sales and nutrient content of fertiliser sales are based on the crop year, which runs from October to September. Data on lime sales refer to the calendar year. While most of the fertilisers sold are used in agriculture, fertilisers may also be used for non-agricultural purposes, such as in golf clubs or private gardens, but the volume used would be only a very small proportion of the total fertiliser sales.

Fertilisers are added to soil to provide crops with nutrients such as nitrogen, phosphorus and potassium. These nutrients enhance crop production but can also be lost from agricultural soil to groundwater, surface water and air, contributing to environmental pollution. Lime is a soil conditioner which is used to regulate the acidity of soil. Applying lime to soil leads to carbon dioxide emissions from the carbon content of the lime. However, as soil acidity is a factor in fertiliser efficiency, applying lime to soil can reduce requirements for nitrogen, phosphorus and potassium fertilisers. This can result in a reduction in pollution, including a reduction in greenhouse gas emissions arising from Nitrogen-containing fertilisers.

According to the CSO Fertiliser Sales 2022, fertiliser sales fell by 18% in 2022. The nitrogen (N) content of fertilisers sold in 2022 was 14% lower than in 2021 at 343,193 tonnes of nutrient. The phosphorus (P) content of fertilisers sold was down 26% on 2021 at 34,240 tonnes, while the potassium (K) content was down 24% at 93,614 tonnes.

Figure 8.4 *Nutrient Content of Fertiliser Sales by Nutrient (N, P, K), 2000-2022*



Source: CSO

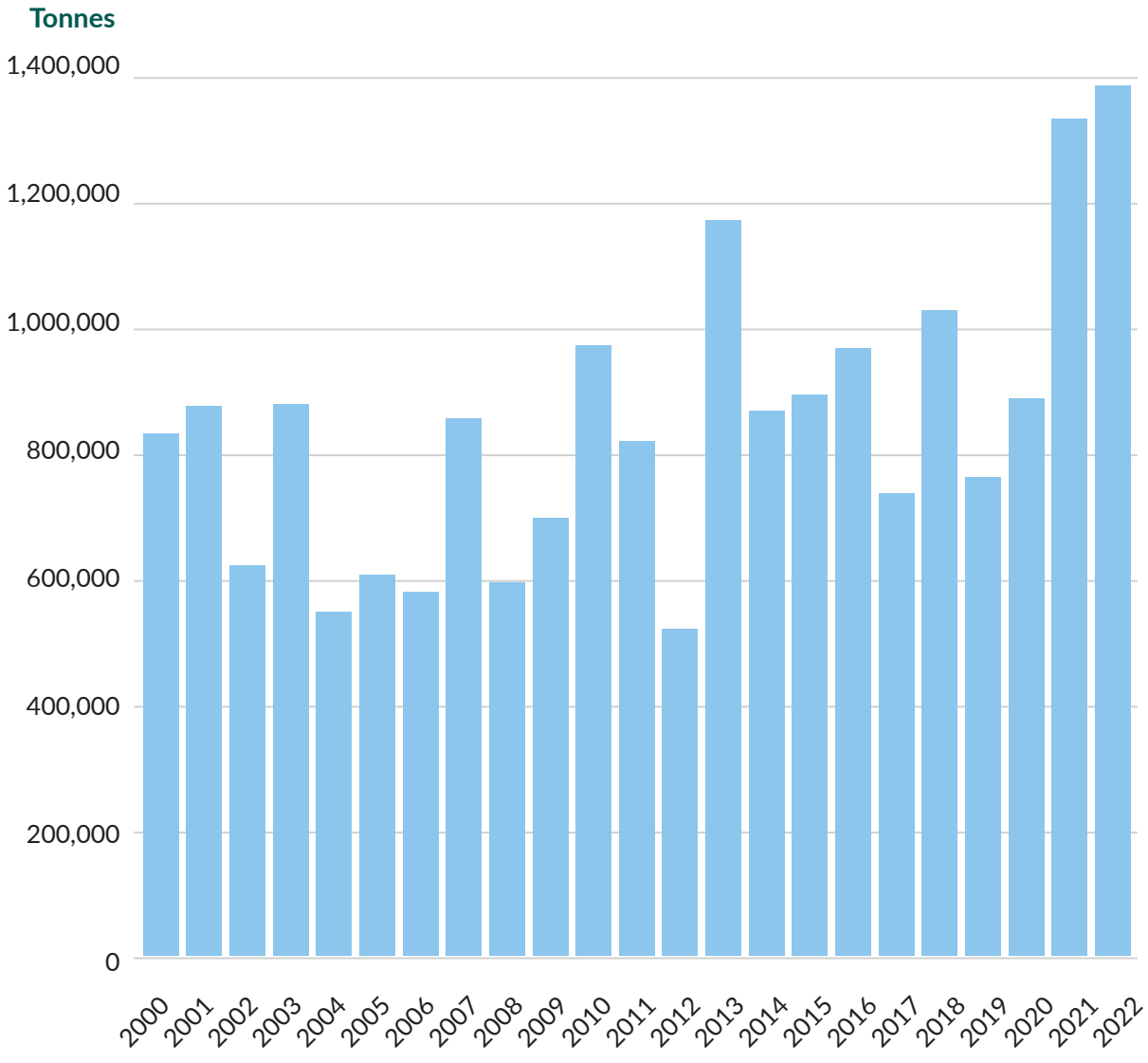
The nitrogen content of fertilisers sold in Ireland was 407,598 tonnes in 2000. It fell to its lowest level of the period 2000-2022 in 2011 at 295,795 tonnes, while it was highest in 2018 at 408,495 tonnes. Phosphorus content was at its highest level of the period 2000-2022 in 2000 at 49,267 tonnes and was lowest in 2009 at 20,231 tonnes. Potassium content was at its highest level in 2021 at 122,922 tonnes, marginally above sales in 2000, while in the intervening 20 years sales were lower each year. In 2009 potassium sales were just 52,403 tonnes while in 2022 sales were 93,614 tonnes.

While it is a positive move that fertiliser sales fell in 2022 some of that drop may have been influenced by the record high prices. As can be seen in the chart, fertiliser sales tended to drop over the first decade of this century but have tended to increase over the past decade.

Lime sales were at 832,700 tonnes at the start of this century and have varied considerably over the years dropping by up to 38% but increasing by up to 125% from one year to the next. However, since 2019 when limes sales were 762,867 tonnes, they have increased each year until 2022, when sales have reached 1,386,915 tonnes.

Lime sales in 2022 were a record 1.4 million tonnes, the largest quantity of any year since 2000 and the second year that lime sales have exceeded 1.3 million tonnes. This compares to annual average sales on 0.8 million tonnes over the previous 21 years.

Figure 8.5 *Lime Sales, 2000-2022*



Source: CSO

8.12 Plant Protection Products

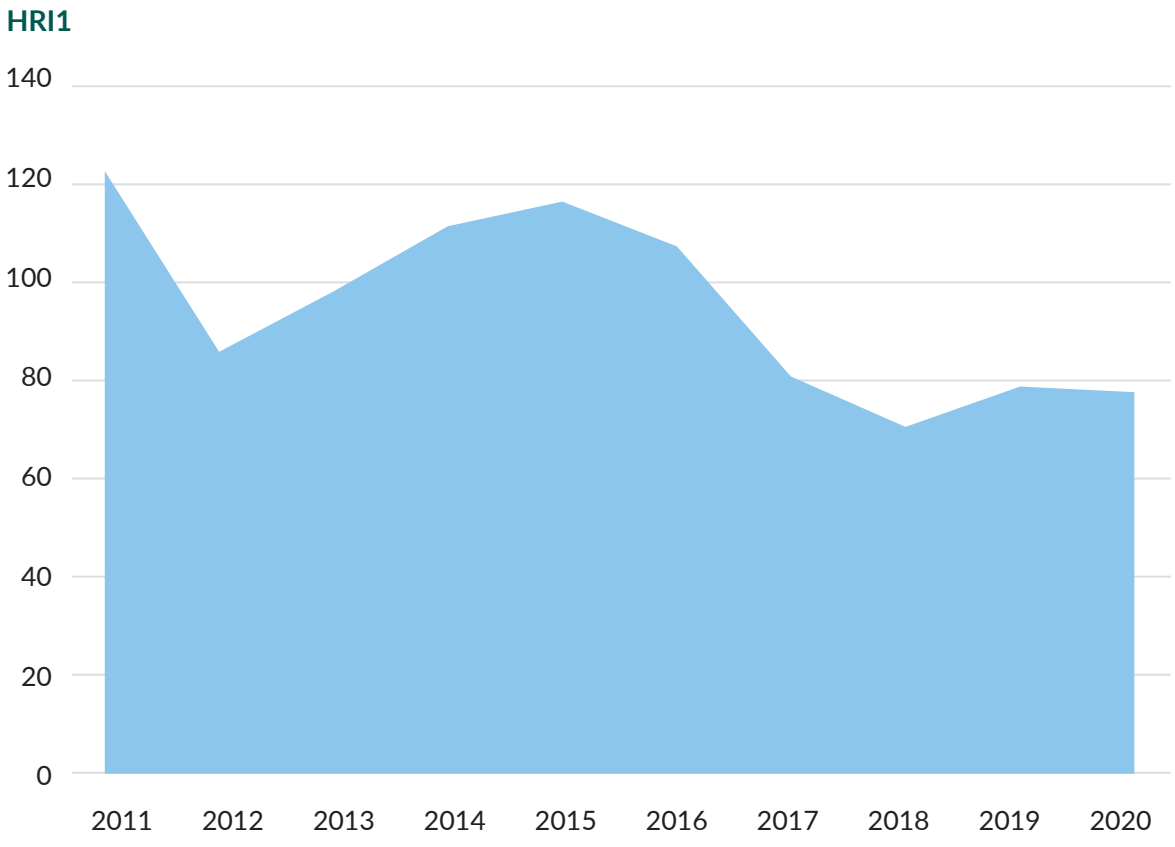
For the first time in 2022 the CSO issues a release on plant protection products. The release contained data on sales of active substances contained in plant protection products placed on the market in Ireland annually from 2011 onwards. These substances are classified as:

- Fungicides and bactericides;
- Herbicides, haulm destructors and moss killers;
- Insecticides and acaricides;
- Molluscicides;
- Plant growth regulators; and
- Other plant protection products.

The data are expressed in measurement units of tonnes of active substances. The release also contained data on Harmonised Risk Indicator 1 (HRI1). Harmonised risk indicators are used to measure progress achieved in relation to the sustainable use of pesticides. HRI1 is an index calculated by categorising the active substances in plant protection products into four groups based on the level of risk associated with each product, applying hazard weightings to the four groups, and taking as a base the average value for the period 2011-2013.

The 2023 release Plant Protection Products 2021 highlighted that the HRI1 for pesticides decreased 37% between 2011 and 2020. HRI1 was at its highest value between 2011-2020 at 120 in 2000 and dropped as low as 69 in 2018, before rising to 77 in 2019 and falling slightly in 2020 back to 76.

Figure 8.6 *Harmonised Risk Indicator 1 for Pesticides, 2011-2020*



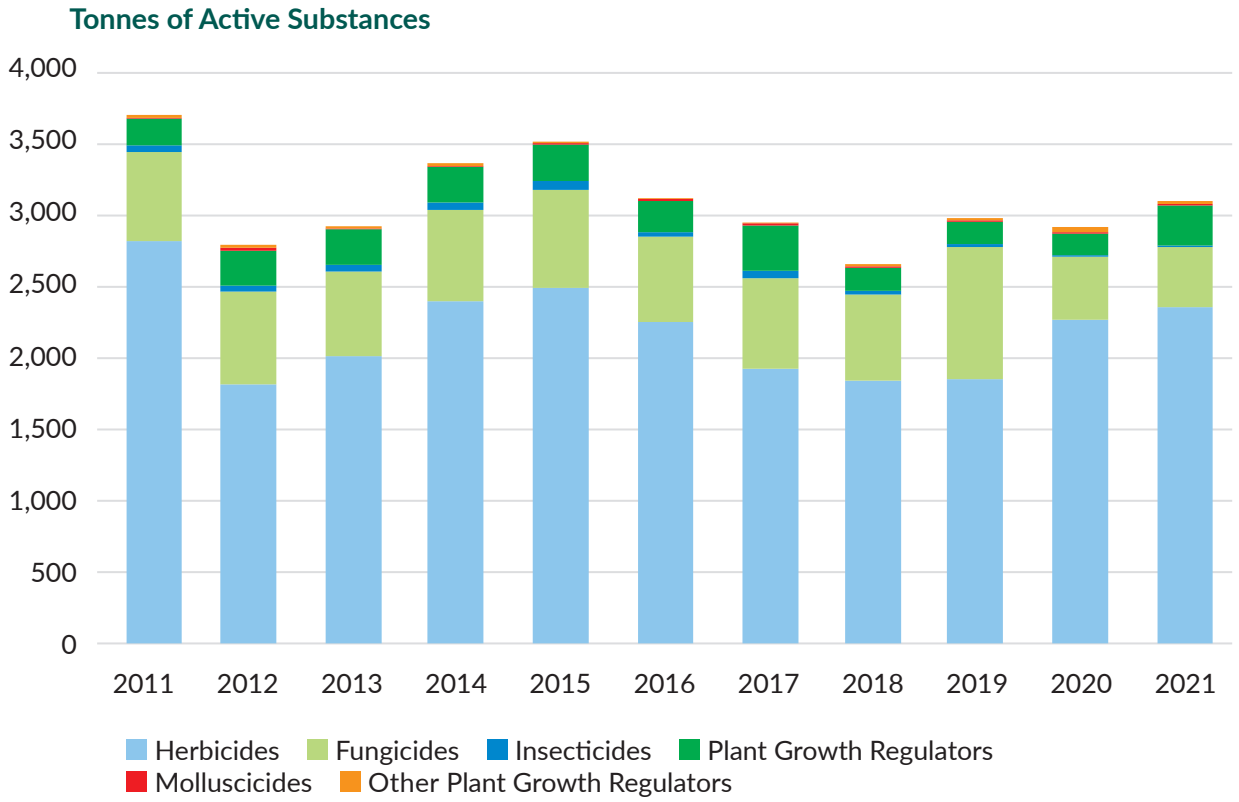
Source: CSO

Herbicides, also commonly known as weed killers, were the predominant type of plant protection product sold in Ireland in each year from 2011 to 2021. In 2021, active substances in herbicides made up 76% of total active substances in plant protection products.

Fungicides and plant growth regulators were the next most prevalent types of plant protection product sold in the decade up to 2021. Active substances in fungicides were 14% of the total in 2021, while active substances in plant growth regulators were 9% of the total.

Active substances in molluscicides (for control of pests such as snails and slugs) comprised less than 1% of total active substances in plant protection product sales in each year from 2011 to 2021, while active substances in insecticides made up less than 1% of the total from 2019 to 2021 and less than 2% of the total from 2011 to 2018.

Figure 8.7 *Tonnes of Active Substances in Plant Protection Products by Product Group, 2011-2021*



Source: *CSO*

8.13 Teagasc National Farm Survey 2021 Sustainability Report

The Teagasc National Farm Survey 2021 Sustainability Report provides the latest available information on the sustainability performance of farms in Ireland, based on detailed analysis of data collected through the Teagasc National Farm Survey (NFS). Economic, Social, Environmental and Innovation sustainability dimensions are measured for dairy, cattle, sheep and tillage farms in 2021. In chapter two of this publication the economic performance was highlighted using the preliminary data from the 2022 NFS along with some of the social sustainability indicators from the 2021 NFS Sustainability report. Here the focus is on the environmental dimension.

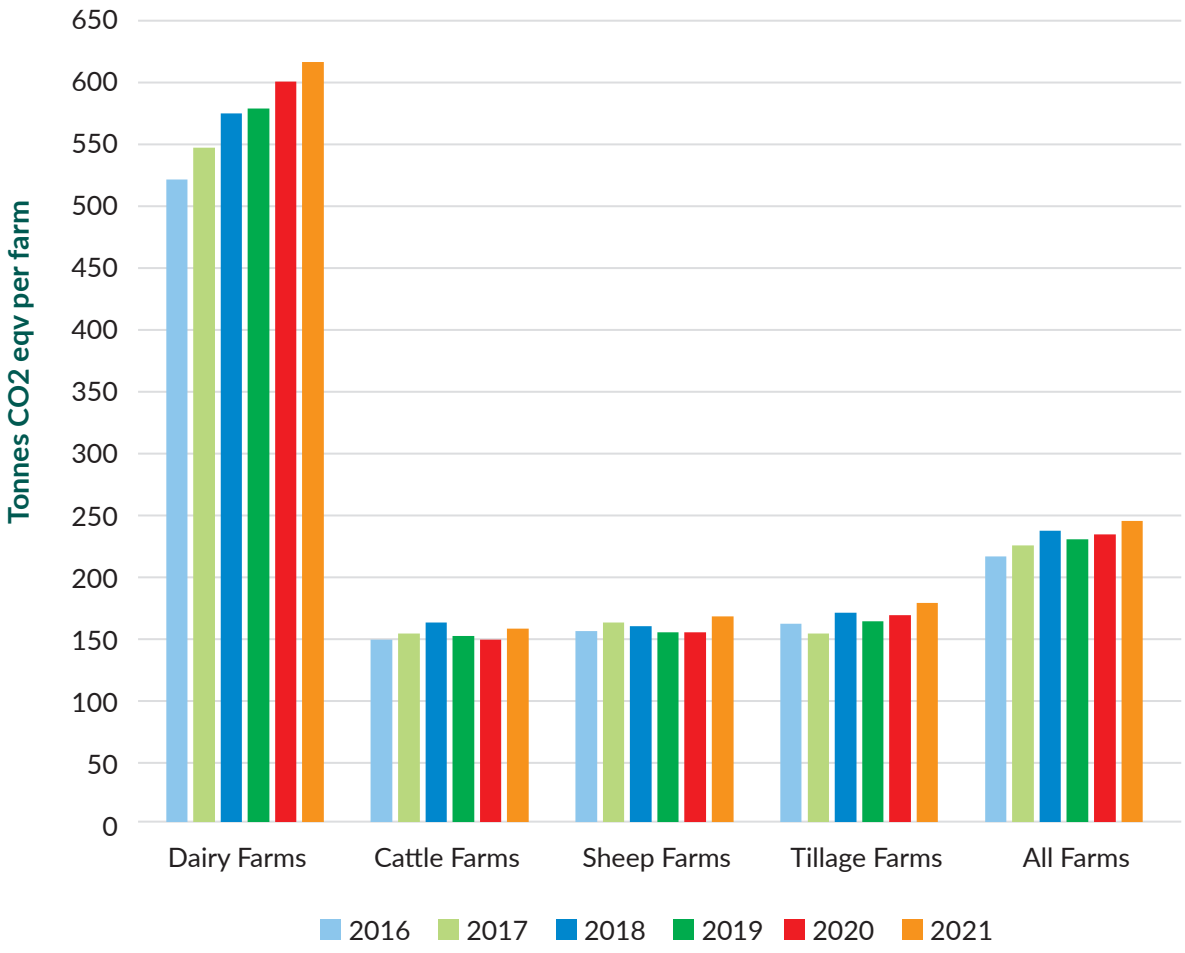
Agriculture can generate positive or negative environmental impacts depending on the specific activities undertaken on the farm. Agriculture is the principal land use in Ireland and the environmental sustainability of agriculture is key to achieving national level objectives relating to the environment. The current set of NFS based environmental indicators focus on greenhouse gas (GHG) emissions, ammonia emissions and nitrogen and phosphorus use.

Greenhouse Gas Emissions

As highlighted earlier in this chapter, provisional EPA Inventory data shows that the agriculture sector was directly responsible for 38.4% of national Greenhouse Gases (GHGs) emissions in 2022, mainly methane from livestock, and nitrous oxide due to the use of nitrogen fertiliser and manure management. The EPA data also indicates that greenhouse gas emissions from agriculture in Ireland decreased by 1.2% in 2022 following an increase in 2021 of 3.6%.

The data in the NFS Sustainability Report covers the period up to 2021 only and therefore does not reflect the reduction in GHGs from agriculture in 2022 as reported by the EPA. As methane from livestock contributes significantly to GHGs, dairy farms which tend to be larger in area and to be more heavily stocked than cattle or sheep farms, will produce more GHGs than the other livestock sectors. Tillage farms, which tend to be of a similar size to dairy farms, produce less GHGs due to smaller numbers of livestock. While GHGs have increased on dairy farms each year between 2016 and 2021, this is unlikely to continue to the same extent as during that period many dairy farms expanded following the removal of milk quotas in 2015.

Figure 8.8 *Total Farm Average GHG Emissions 2016 - 2021*

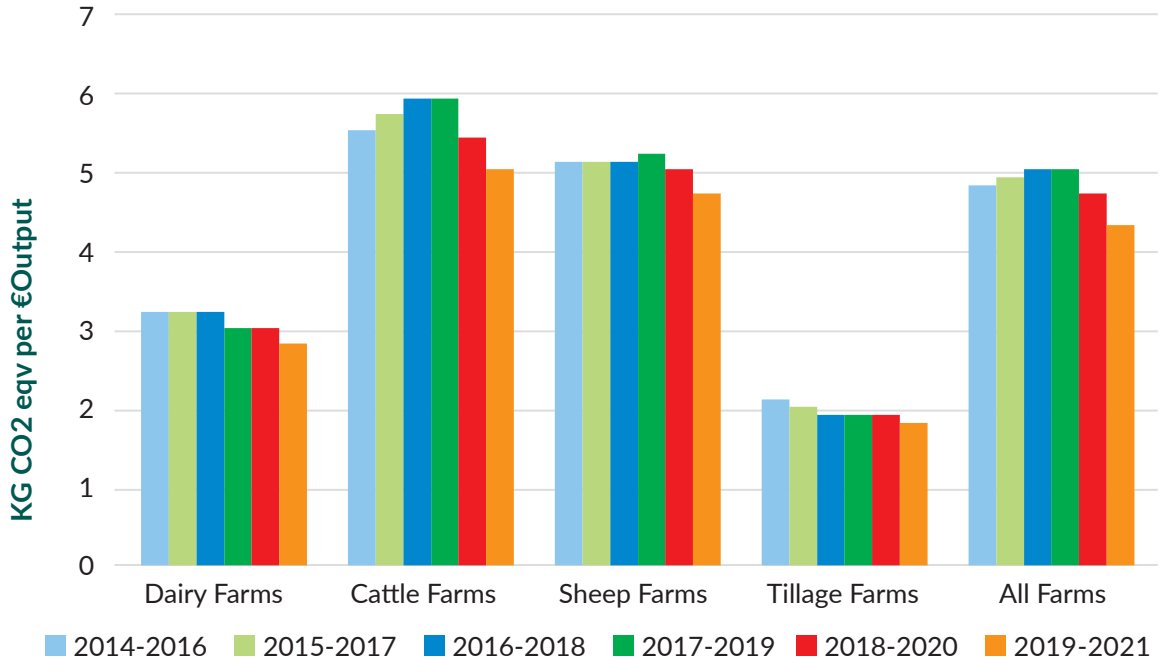


Source: *Teagasc NFS Sustainability Report 2021*

The average emissions across all farms have risen slightly over the period 2016 to 2021 but as mentioned earlier, provisional data from the EPA indicate that GHG emissions in agriculture have fallen somewhat in 2022.

The report also looks at GHG emissions emitted based on the value of output. This indicates that average GHG emissions emitted per euro of output have been tending to fall in recent years. It also highlights that based on output, both cattle and sheep farms generate more GHGs than dairy farms and tillage farms.

Figure 8.9 *Average GHG Emissions Emitted per € output - 3 Year Rolling Average 2016 - 2021*



Source: *Teagasc NFS Sustainability Report 2021*

Ammonia

Ammonia (NH3) is an air pollutant contributing to eutrophication and acidification of terrestrial and aquatic ecosystems. In Ireland ammonia emissions come almost exclusively from agriculture. In this report, Teagasc have categorised farms by their main activity such as dairy or cattle. However, as can be seen in the table with a breakdown of ammonia emissions by farm, most farms have more than one category of farming taking place. While most of the ammonia emissions on a dairy farm are generated by the dairy enterprise, most dairy farms have cattle, and in some cases sheep or tillage also, and these other enterprises also contribute to the total emissions.

Table 8.2 *Average Tonnes of Ammonia Emissions by Farm 2021.*

Tonnes of Ammonia Emissions 2021					
	Dairy	Cattle	Sheep	Tillage	Total
Dairy Farms	2.13	0.76	0.006		2.8960
Cattle Farms	-	0.77	0.16	0.001	0.9310
Sheep Farms	-	0.42	0.36	0.0006	0.7806
Tillage Farms	-	0.49	0.053	0.19	0.7330

Source: *Teagasc NFS Sustainability Report 2021*

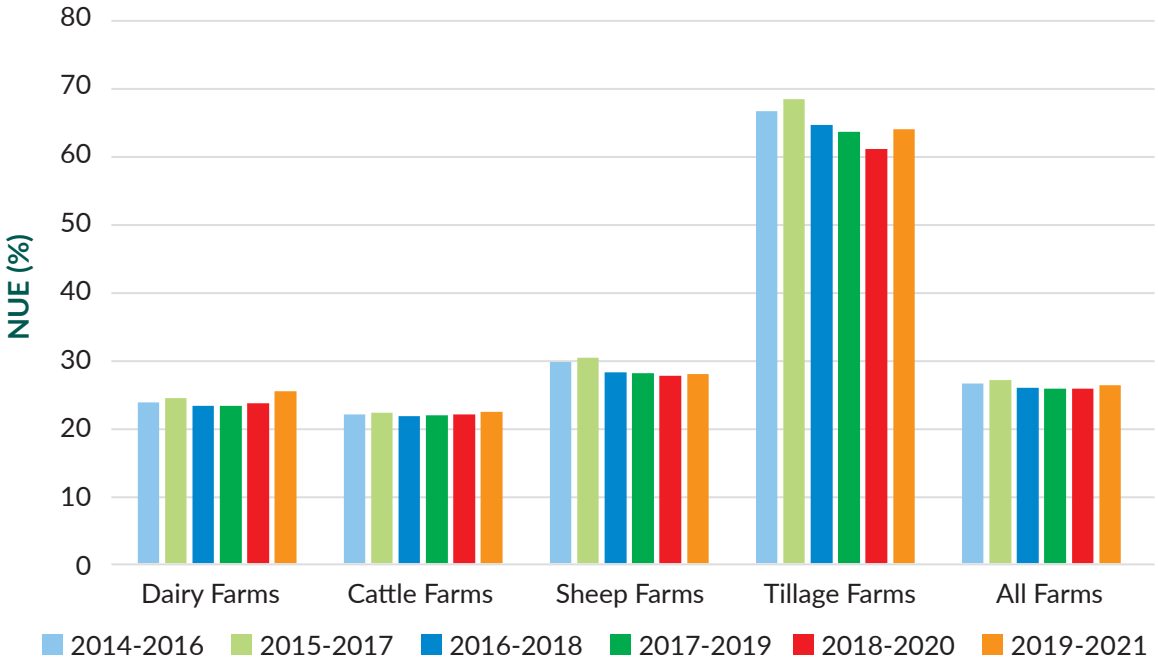
As can be seen in the table most of the ammonia emissions are generated by dairy followed by cattle enterprises on all farms, while the level of ammonia emissions generated by sheep or tillage enterprises is relatively small.

Nitrogen (N) and Phosphorus (P)

The report also looks at nitrogen (N) and phosphorus (P) use indicators. These indicators measure N and P brought onto the farm and exported from the farm. It should be noted that the N and P indicators do not provide estimates of losses to water, as such losses are complex and driven by site-specific biophysical factors and weather conditions. N and P balances are used as an indicator of potential risk of loss of nutrients, all other things being equal. Both N and P are important elements in agriculture production.

The data illustrates that dairy and cattle farms tend to have the lowest nitrogen use efficiency (NUE) over the study period. Tillage system NUE was generally significantly higher than all other systems due to the mainly non-livestock nature of this system.

Figure 8.10 *Nitrogen Use Efficiency (NUE) (Percentage) - 3 Year Rolling Average 2016 - 2021*

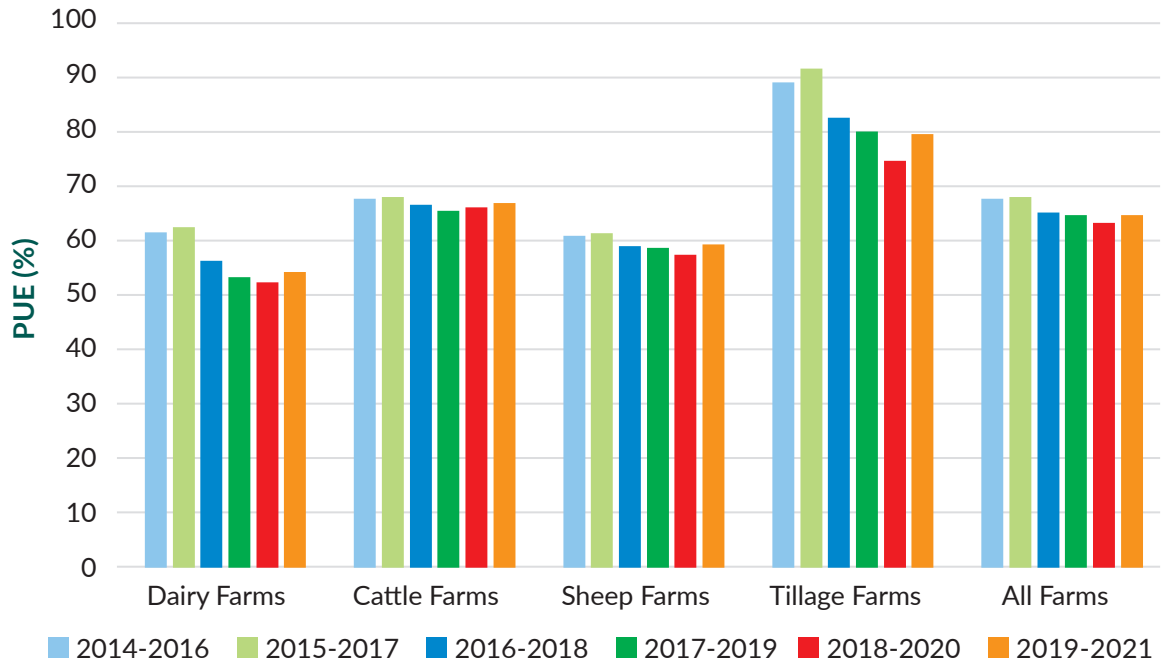


Source: *Teagasc NFS Sustainability Report 2021*

Based on a three-year rolling average basis across all farm systems, Phosphorous use efficiency (PUE) has generally declined between the start and end of the period analysed for dairy and tillage, while it has increased for cattle systems. However, farm gate PUE measures must be interpreted with care, since establishing true PUE requires a soil test.

Both the Nitrogen use efficiency and Phosphorous use efficiency is used to highlight the proportion of N retained in the farm system (N outputs / N inputs). This is a generic measure allowing temporal comparisons at the farm gate level.

Figure 8.11 *Phosphorus Use Efficiency (NUE) (Percentage) - 3 Year Rolling Average 2016 - 2021*



Source: *Teagasc NFS Sustainability Report 2021*

Innovation Indicators

The report also looks at innovation indicators where farmers are adapting management techniques to drive efficiency and profitability, while reducing negative environmental and social effects, thereby assisting progress towards more sustainable agriculture. Among the measures looked at are the following:

- Discussion groups
- Liming
- Spring slurry spreading
- Protected urea use
- Reseeding
- Low emission slurry spreading
- Break crop on tillage farms and
- Milk recording on dairy farms.

As highlighted earlier in this chapter the use of lime has increased in recent years. While this will contribute to GHG emissions, it adjusts the soil pH towards its optimum and will ultimately improve plant nutrient take up.

The use of low emission slurry spreading has also increased in recent years and the Teagasc report indicates that 48% of slurry was applied by this method in 2021, up from just 4% in 2018.

CHAPTER 9

Research

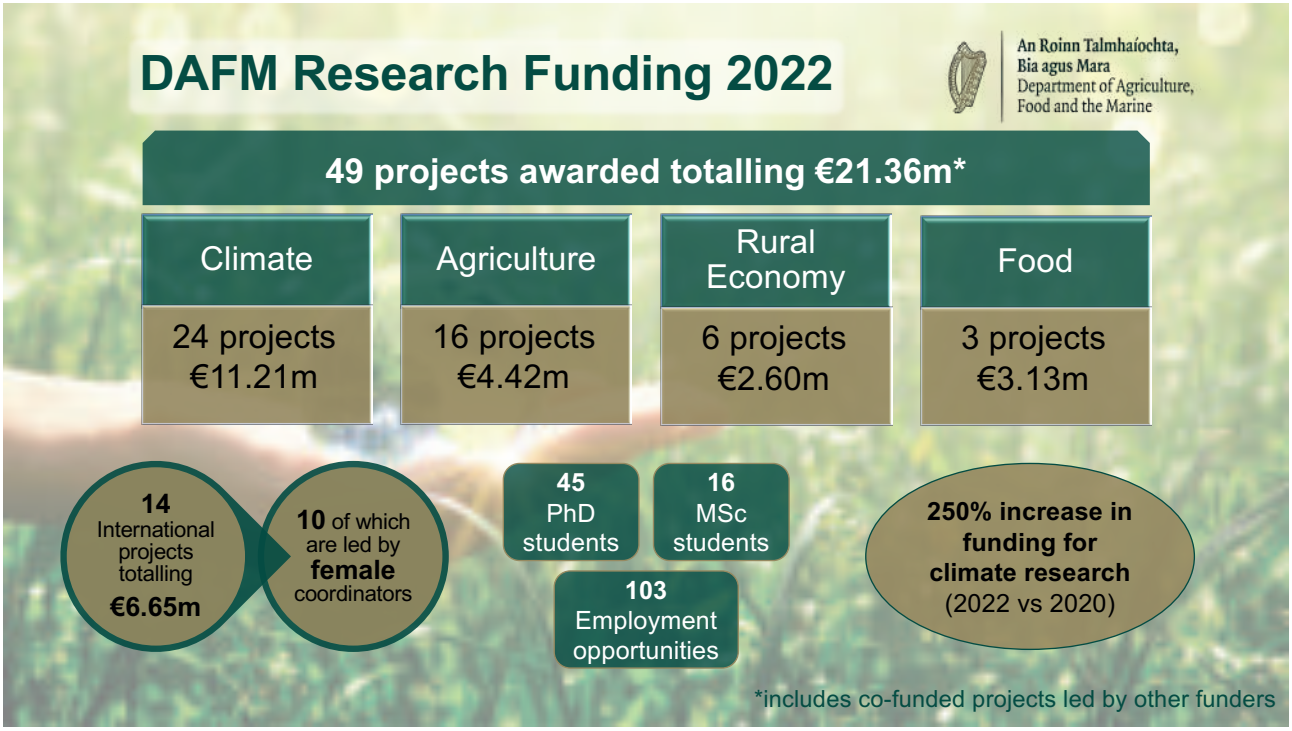
DAFM Research funded
49 projects
in 2022 with a total value of €21.4 million.

Funding for climate research in 2022 was
up 250%
compared to 2020.

A new bilateral
Joint Research Mechanism
was established in 2022 with New Zealand.

9.1 Overview

DAFM is a significant funder of competitive, public-good research, having invested over €210 million since 2010. A summary of the main national, European and International activities in 2022 are outlined below.



In 2022 DAFM research funding funded or co-funded 29 projects with a total value of €21.36 million. Around half of the funding were for projects related to climate research with 24 projects and over €11 million of funding. One third of the projects related to research in agriculture with the balance of projects researching the rural economy and food.

9.2 National Research Supports 2022

Policy and Strategic Studies Research Call

During 2022, DAFM launched a new research funding instrument - the "Policy and Strategic Studies Research Call" (PSSRC). The purpose of the PSSRC is to initiate policy-orientated research that will expand the evidence base for DAFM to inform and underpin the development of policies, schemes and services across the agri-food, forest, and biobased sectors. The PSSRC also aims to further enhance and improve the communication, collaboration and knowledge exchange between researchers and policymakers that will lead to an acceleration of the adoption of research to policy and improve the impact of research to the wider sector.

Twenty-six applications were received across the 20 research topics under the Call, with 19 successful projects, involving a total of 12 research performing organisations. These projects

cover a wide range of areas such as climate adaptation, plant health regulation and pesticides, forestry, animal health and welfare, the bioeconomy, and women in farming. A full list of the successful projects can be found at assets.gov.ie.

DAFM Thematic Research Call 2021

In 2022, the Department awarded a further €9.7 million to 12 projects under the 2021 National Thematic Research Call. The research supported crosses areas including climate, the environment, food safety, animal health, human nutrition, the bioeconomy and food processing. A list of the successful research projects can be found on at Summary of information on research projects funded under Call 2021 Reserve List.

9.3 European Research Supports 2022

European Research Area Networks (ERA-Nets) and Trans-national Calls

In 2022 the Department continued to use funding under its competitive research programmes to enable Irish researchers to participate in collaborative international partnerships through selected European Research Area Networks (ERA-Nets), Joint Programme Initiatives (JPIs) and Trans-National Calls. Notable commitments under these initiatives in 2022 included:

- €1.5 million was committed by DAFM to the 2nd External Call of EJP Soil on managing and mapping agricultural soils for enhancing soil functions and services.
- €1 million was committed to the 2022 Joint Call on transparent agri-food systems for consumers and other stakeholders along the food value chain based on ICT technologies.
- €500,000 was committed by DAFM to the Joint Programming Initiative - a Healthy Diet for a Healthy Life (JPI HDHL) 2022 research call to investigate responsiveness between nutrition and the immune system. A similar commitment was made to invest in the JPI HDHL 2023 research call on 'New food resources and technologies to improve public health and food security'.
- €997,096 was awarded to two projects under the Joint FACCE-JPI (Joint Programme Initiative on Agriculture, Food Security and Climate Change) and SusCrop (Sustainable Crop Production) Agrobiodiversity Research Call.

Horizon Europe

Horizon Europe is the EU's funding programme for research and innovation with a budget of €95.5 billion. It tackles climate change, helps to achieve the UN's Sustainable Development Goals and boosts the EU's competitiveness and growth.

In Horizon Europe, Cluster 6 focuses on Food, Bioeconomy, Natural Resources, Agriculture and Environment. The first signature year for Horizon Europe research calls was 2022. In Cluster 6, Ireland successfully secured over €50m from 83 different research calls. Irish researchers will coordinate 11 projects and collaborate with more than 1,800 other research organisations from around the world in other projects.

9.4 International Research Supports 2022

Ireland-New Zealand Joint Research Mechanism

Under the DAFM International Outreach Strand, a new bilateral Joint Research Mechanism (JRM) was established in 2022 with New Zealand. Initially for a 3-year pilot period, this involved the signing of a Memorandum of Arrangement (MoA) between DAFM and the Ministry of Primary Industries New Zealand on 12th May 2022. It aims to tackle shared policy priorities and contribute to evidence-based solutions for agriculture to mitigate its impact on climate change. The framework provides for joint research calls between both countries and the first such call was run in 2022. It invited proposals on strategies, technologies and novel systems to reduce and account for greenhouse gas emissions from agriculture ruminant production systems.

Four projects were subsequently awarded DAFM funding of €3.6 million for the Irish institutes involved, and when combined with the Ministry for Primary Industries funding of €3.5 million for the New Zealand institutes, total funding awarded under this Call was €7.1 million.

The successful projects and awards are as follows:

1. **Development and Validation of high throughput predictors for large capacity screening of methane emitting ruminant livestock at an individual and system level** – Methane-Predict (DAFM - €1,004,404.22, Total - €1,995,675.02).
   - **a.** Irish Co-ordinator: Fiona McGovern (Teagasc Athenry)
   - **b.** New Zealand Coordinator: Suzanne Rowe (AgResearch Ltd)
2. **REfining Emission Factors for Inventory Reporting** – REEFIR (DAFM - €631,012.14, Total - €1,495,952.35).
   - **a.** Irish Co-ordinator: Dominika Kroll (Teagasc Johnstown Castle)
   - **b.** New Zealand Coordinator: Tony van der Weerden (AgResearch Ltd)
3. **RUmen microbiome MINING for bacterial cultures to reduce methane** – RU_MINING (DAFM - €992,712.62, Total - €1,992,713.39)
   - **a.** Irish Co-ordinator: Catherine Stanton (Teagasc Moorepark)
   - **b.** New Zealand Coordinator: William Kelly (AgResearch Ltd)
4. **Roadmap for efficient and effective ruminant breeding programs to reduce enteric methane production** – ROADMAP (DAFM - €995,946.52, Total - €1,595,246.52)
   - **a.** Irish Co-ordinator: Donagh Berry (Teagasc Moorepark)
   - **b.** New Zealand Coordinator: Natalie Howes (AbacusBio Ltd)

US-Ireland R&D Partnership

The US-Ireland R&D Partnership is a tri-jurisdictional alliance between Ireland, Northern Ireland and the United States, which aims to promote collaborative, innovative research projects that create value above and beyond individual efforts. The 2022 Call for Proposals saw an increase to 12 in research topic areas, which resulted in renewed interest, with the partners receiving 11 submissions, the most of any call since 2017. One was subsequently successful and will involve researchers in Ireland teaming up with the Agri-food and Biosciences Institute, Northern Ireland and Auburn University, USA to use engineered biochar to absorb excess soil phosphorus, with subsequent slow release for cost effective and sustainable crop production.

Co-funding Initiatives

In 2022, DAFM entered co-funding arrangements with the Sustainable Energy Authority of Ireland (SEAI) and the Environmental Protection Agency (EPA) on a range of projects of mutual interest. This included co-funding up to €2 million across 10 projects from the 2022 EPA Research Call. In addition, DAFM also continued co-funding of the SFI VistaMilk Centre.

9.5 Research Case Studies

VitD-DPI: Development of a National Framework for Vitamin D Deficiency Prevention – A Multi-actor Approach to Nutrition Security

Project coordinator: Prof. Kevin Cashman, University College Cork in collaboration with Teagasc and University College Dublin.

Project award: €1,256,295

Background

Vitamin D deficiency is common across Europe, especially in Ireland. It can have a negative impact on skeletal development among children and contribute to ill-health among adults, including impaired immune defence. Vitamin D deficiency is due to a combination of low sunlight and/or low vitamin D intake. Limited sun availability in Ireland means that we are dependent on food to supply vitamin D, but because the amount of vitamin D in our food system is low, our intake of vitamin D is also low.

Importance/Value of Research

Scientists have known for a decade that fortifying food can potentially prevent vitamin D deficiency, but there is a need for a framework between scientists and the public. The government, policy makers and the industry has failed to convert knowledge to action.

Expected Outcomes

The first objective is to engage all stakeholders, including government, regulatory authorities, industry, civil society and scientists to identify, analyse and co-design policy-ready solutions to the vitamin D problem. As a next step in tackling the issue, the team are exploring the feasibility for a commonly consumed, sustainable food to act as a vehicle for vitamin D supplementation. From the outset, this is expected to be in the form of a healthy, fibre-rich, reduced-salt, vitamin D-fortified bread. The team will then conduct two community-based, wintertime dietary intervention studies to test whether vitamin D-fortified bread is effective, safe, and acceptable to people in preventing vitamin D deficiency. The project's final objective is to present a national proposal, that is endorsed by all stakeholders, offering a strategy to solve vitamin D deficiency in Ireland.

Benefits to the Sector

The VitD-DPI project has the potential to develop and validate an integrated policy-ready proposal for Vitamin D deficiency prevention in Ireland that is safe, effective, suitable, consistent with a sustainable healthy diet and acceptable to all stakeholders.

AGRI-SOC - Evaluating Land-Use and Land Management Impacts on Soil Organic Carbon (SOC) in Irish Agricultural Systems

National Lead Researcher: Prof. Gary Lanigan, Teagasc in collaboration with Trinity College Dublin, University of Limerick

Overall Project Funding: €598,052

Background

Funded under the 2017 National Research Call, Agri-SOC seeks to address agricultural greenhouse gas (GHG) emissions through carbon sequestration associated with pastures and improved grassland management practices.

Importance/Value of Research

More accurate quantification of carbon sequestration in grasslands is essential to allow reporting to tier 2 and 3 levels in the National Inventory Reporting and to provide information that allows for both effective reduction and mitigation of carbon dioxide emissions at both the field and national level. Management practices that can increase SOC stocks to mitigate climate change will provide the basis for inclusion in grassland soils management.

Benefits to the Sector

This project will assist the sector both in terms of carbon credits and a reduced carbon footprint on agricultural produce. The results will also integrate with various other projects quantifying and modelling carbon and nitrogen processes, to provide a costed toolkit for the potential management of carbon associated with grasslands.

AdaptForRes - Adaptation, Mitigation and Protection Strategies to Increase Resilience of Irish Forests to Address the Impacts of Climate Change

National Lead Researcher: Dr. Niall Farrelly, Teagasc, Mellows Centre, Athenry, Co. Galway

Overall Project Funding: €2,599,494

Background

Resilience is a measure of how a forest responds to a perturbation, and how quickly it can recover to its ideal state. In the face of changing climate, and increased threat from pests and pathogens, building the resilience of forest ecosystems is vital to protecting the ecosystem services they deliver. This research addresses three measures aimed at increasing resilience: 1-Forest Genetic Options, 2-Forest Management Practices and 3-Forest protection measures.

Importance/Value of Research

Responding to the challenges posed by climate change requires a concerted effort to increase resilience so that forests are adapted to changing conditions and have increased protection from damaging agents. This is an essential component of sustainability so they can continue to deliver ecosystem services to society.

Benefits to the Sector

This research aims to identify new forest management practices and tools that are resilient and adaptable under climate change while ensuring the continued provision of goods and services and the benefits of forests to society. To assist policy, appropriate species selection matched to site will ensure crop sustainability, and that forestry maximises its potential as a mitigation strategy. To minimise risk to the resource, diverse and adaptive forest management strategies will be investigated which may provide information about the suitability of systems for enhanced resilience and the sustainability to the forestry sector. This research aims to enhance plant health detection efforts in Ireland, by researching a global horizon scan and pest risk assessment for key forest species in Ireland. The potential of using a risk-based surveillance network and new eDNA methods to detect the presence of notable pests and pathogens will be examined.

Mental Health Help-Seeking in Irish Farmers

National Lead Researcher: Dr Siobhan O'Connor, Dublin City University

Overall Project Funding: €210,569

Background

Mental health is a major societal issue in Ireland, with international research reporting that farmers are particularly at risk due to their higher rates of mental issues such as depression, anxiety, stress and burnout. Farmers must be able to identify their symptoms and seek help when experiencing mental health issues. Unfortunately, research has found that farmers are less likely to seek help for mental health difficulties than the general public and many barriers can occur that prevent help-seeking including a lack of awareness of mental health symptoms and available supports, stigma, self-stigmatisation, rural masculine norms and poor social support. There is a severe dearth of research examining mental health among Irish farmers and no current research on mental health help-seeking.

Importance/Value of Research

This research project aims to improve the Irish farming community's mental health literacy and intentions to seek help when experiencing mental health issues. Guided by the Medical Research Council framework for developing a complex intervention, the project will firstly ascertain the extent of mental health issues in the Irish farming community and factors associated with poor mental health. Secondly, using a qualitative study design it will identify the barriers and facilitators towards mental health help-seeking and the most ideal education strategies to engage in this will be examined. Finally, the project will design and evaluate the effectiveness of a bespoke education intervention designed with the farmers' voice and views immersed throughout.

Benefits to the Sector

This research project's main expected impact is the development of an effective tailored educational intervention that will improve Irish farmers' mental health help-seeking. The research aims to assist Irish farmers so that in the event they experience mental health difficulties or issues they (i) understand what they are going through and can appraise their symptoms, (ii) know where to seek help and how to contact Irish mental health supports and services and (iii) feel equipped to take the step to seek help from available sources.

Highlighting Pathways to Empower Rural Women to Have Sustainable & Equitable Livelihoods in Farming

National Lead Researcher: MaryAnne Hurley, Munster Technological University

Overall Project Funding: €99,495

Background

In 2015, the UN committed to seventeen Sustainable Development Goals (United Nations, 2015), SDG 5 focuses on gender equality, targeting gender equality and empowering women and girls everywhere by 2030. Seven years on, large gender gaps remain across the world. Irish data from the Census of Agriculture 2020 highlights that women are underrepresented as farm holders, and that there are many unrecognised women working in the agricultural sector, making valuable contributions every day to family farms, who are essentially 'invisible'. In order to track gender equality commitments at EU and national level, better visibility of the status of women in agriculture is crucial to the successful creation, implementation and evaluation of future strategies.

Importance/Value of Research

This research will establish a position on women in farming and the agriculture sector, providing evidence for future policy interventions to enhance the role of women in the sector. It will achieve this by providing insights into the lives of women farmers and workers in the agricultural sector of all ages. A gendered focus will be used to analyse existing data on farm income, farm payments and capital investment in farms. The project will identify barriers and enabling factors throughout the career paths taken by women who train in the agricultural sector and the reasons for these choices. It will further identify any geographical differences by region or county in the participation levels, incomes and experiences of women involved in agriculture.

Benefits to the Sector

Reviewing existing datasets (e.g., Census of Agriculture 2020, National Farm Survey), augmenting these with the voice of women in agriculture through interviews and focus groups. This will be used for future guidance for policy design and implementation across all agri-sectors, prioritising inclusivity and gender equality for all women.

Transforming Pasture-Based Livestock Systems Through Improved Design of Multi-Species Mixtures Under Reduced-Nitrogen Regimes

National Lead Researcher: John Finn, Teagasc

Project Funding Awarded by DAFM: €1,215,608 This project was co-funded by DAERA

Background

Multi4More investigates and synthesises understanding of plant diversity (grasses, legumes, herbs) and fertiliser effects on multi-species mixtures to enhance agronomic performance and environmental sustainability in forage-based livestock systems under lower-nitrogen conditions. Multi4More will develop targeted knowledge transfer resources.

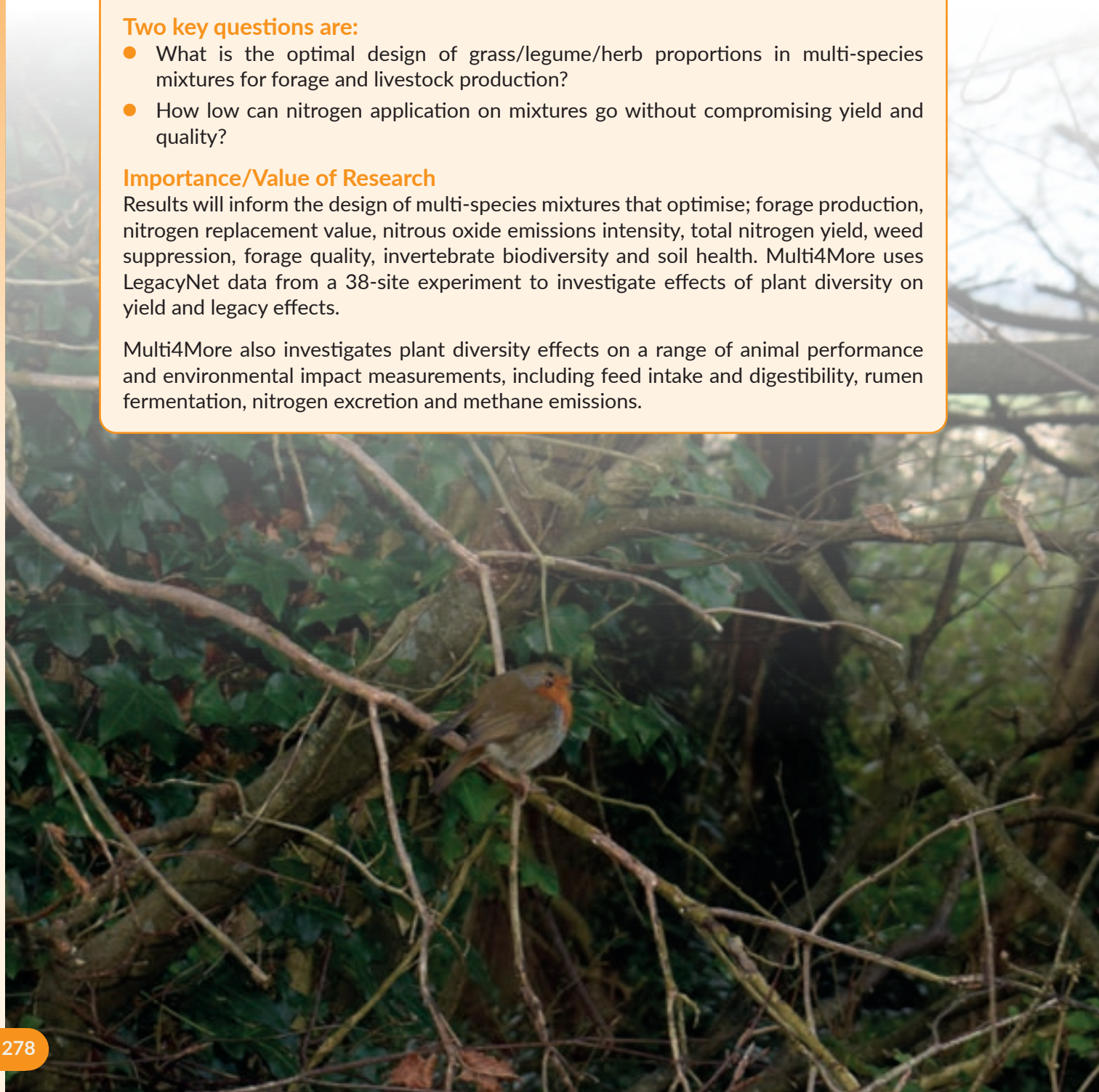
Two key questions are:

- What is the optimal design of grass/legume/herb proportions in multi-species mixtures for forage and livestock production?
- How low can nitrogen application on mixtures go without compromising yield and quality?

Importance/Value of Research

Results will inform the design of multi-species mixtures that optimise; forage production, nitrogen replacement value, nitrous oxide emissions intensity, total nitrogen yield, weed suppression, forage quality, invertebrate biodiversity and soil health. Multi4More uses LegacyNet data from a 38-site experiment to investigate effects of plant diversity on yield and legacy effects.

Multi4More also investigates plant diversity effects on a range of animal performance and environmental impact measurements, including feed intake and digestibility, rumen fermentation, nitrogen excretion and methane emissions.



Statistical Annex

Table 1 *Output, Input and Income in Agriculture – Final Estimates, 2021 - 2022*

Description	2021 € Million	2022 € Million
Livestock (incl. stock changes)	**3,992.8**	**4,543.3**
Cattle	2,580.7	3,026.8
Pigs	555.4	620.2
Sheep	367.3	377.3
Horses	301.9	314.7
Poultry	187.5	204.2
Livestock products	**3,480.0**	**5,125.9**
Milk	3,397.2	5,026.2
Other livestock products	82.8	99.7
Crops (incl. stock changes)	**2,132.5**	**2,616.2**
Barley	282.9	484.2
Wheat	108.4	151.4
Oats	42.9	59.0
Potatoes	174.5	163.0
Mushrooms	127.7	129.8
Other fresh vegetables	120.3	131.1
Fresh fruit	57.6	63.4
Other crops	105.0	126.5
Forage plants	1,113.2	1,307.8
Goods output at producer prices	**9,605.4**	**12,285.3**
Contract work	464.4	573.5
Subsidies on products	90.1	89.1
Taxes on products	52.9	54.5
Agricultural output at basic prices	**10,106.9**	**12,893.5**
Intermediate consumption	**6,143.2**	**7,918.7**
Feedingstuffs	1,798.4	2,333.3
Fertilisers	605.5	1,208.0
FISIM1	77.3	87.6
Seeds	76.0	96.7
Energy and lubricants	461.2	634.1
Maintenance and repairs	546.8	603.1
Other goods and services	549.7	612.7
Crop protection products	99.3	116.2
Veterinary expenses	355.7	352.3
Forage plants	1,108.9	1,301.1
Contract work	464.4	573.5
Gross value added at basic prices	**3,963.7**	**4,974.8**
Fixed capital consumption	**1,088.4**	**1,213.2**
Machinery, equipment, etc.	544.7	600.1
Farm buildings	543.7	613.1

Description	2021 € Million	2022 € Million
Net value added at basic prices	**2,875.3**	**3,761.6**
Other subsidies less taxes on production	1,679.2	1,903.5
Factor income	**4,554.5**	**5,665.1**
Compensation of employees	876.4	945.5
Operating surplus	**3,678.1**	**4,719.6**
Interest less FISIM[1]	64.5	59.1
Land rental	499.1	542.1
Entrepreneurial income	**3,114.5**	**4,118.4**
[1] FISIM: Financial Intermediation Services Indirectly Measured.		

Source: *CSO, Output, Input & Income in Agriculture Final Estimates, 2022*

Table 2 *Direct Payments to Farmers (National and EU) Calendar Year 2021 - 2022*

Scheme	2021 € Million	2022 € Million
Basic Payment Scheme	1,168.11	1,182.29
Areas of Natural Constraint	246.81	246.68
GLAS	187.44	178.76
Fodder Support Scheme to conserve fodder 2022	-	83.11
Forestry	67.26	70.08
Beef Environmental Efficiency Pilot	40.40	39.43
Beef Data & Genomics Programme	28.89	26.80
Bovine Tuberculosis Eradication Scheme	26.09	26.52
Sheep Welfare Scheme	17.89	17.58
Pig Exceptional Payment Scheme 2022	-	17.18
Results-Based Environment Agri Pilot Project	10.76	14.14
Organics	7.82	12.13
Straw Incorporation Measure	7.68	11.04
Tillage Incentive Scheme 2022	-	8.56
Dairy Beef Calf Programme	2.03	3.54
AEOS	0.03	3.43
Various disease control programmes	2.44	3.38
Other	0.05	3.30
Horticulture Exceptional Aid (HEPS) 2022	-	2.80
Other Locally Led Agri-Environment Schemes	2.04	2.68
Hen Harrier Scheme	3.66	2.29
Pearl Mussel Project	1.03	1.63
Burren Programme	1.47	1.48
GLAS Traditional Farm Building Scheme	1.08	1.07
Other	0.88	0.59
Total Direct Payments to Farmers (National and EU)	**€1,823.86**	**€1,960.48**

Source: *Department of Agriculture, Food and the Marine.*

Table 3 *EU-funded expenditure Managed by the Department of Agriculture, Food and the Marine 2021-2022*

	2021 € Million	2022 € Million
European Agricultural Guarantee Fund (EAGF)	**1,177**	**1,196**
Direct Payment/Single Payment Scheme	1,171	1,180
Intervention/Aid to Private Storage	0	0
Other market supports	12	27
Other	-6	-11
Co-funded receipts (measures co-funded by EU)	**318**	**342.8**
European Agricultural Fund for Rural Development (EAFRD)	313	339
Veterinary fund	4	2.8
Other co-financing receipts	1	1
Fisheries	**13**	**5.6**
EMFF and EFF Fisheries Programme	13	5.6
Total	**1,508**	**1,544**

Note: Only the EU co-funding on these programmes is shown in this table.

Source: *Department of Agriculture, Food and the Marine.*

Table 4 *Expenditure on Agriculture, Food and the Marine, 2021-2022*

	2021 € Million	2022 € Million
European Agricultural Guarantee Fund (EAGF)	**1,183**	**1,196**
Basic Payment/Direct Payment Scheme	1,171	1,180
Intervention/Aid to Private Storage	0	0
Other Market Supports	12	27
Other	-	-11
Voted Expenditure (excluding Administration)	**1,392**	**1,563**
Rural Development[1]	566	590
Structural Measures[1]	77	88
State Bodies	306	317
Horse and Greyhound Fund	96	94
Animal Health	122	137
Research Quality and Certification	30	39
Market Support Costs	6	12
Forestry and Bio-Fuels	70	74
Fisheries	36	43
Food Aid / World Food Programme	25	25
Brexit Response Loan Scheme	16	18
Other	42	126
Administration	**300**	**331**
Total Voted Expenditure (including Administration)	1,692	1,894
Total DAFM Expenditure	**2,875**	**3,090**

Note: (1) EAFRD Rural Development measures and certain Structural Development measures are part financed by the EU and the Exchequer. These figures are total expenditure on these measures in the calendar year.

Source: *Department of Agriculture, Food and the Marine.*

Table 5 *Total Payments (Direct and Capital, incl. TAMS) to Farmers by DAFM by County in 2022*

	Average Farmer Payment Per County	Total payments
County	**Rounded to nearest €500**	**Per County € Millions**
Carlow	€21,000	€39
Cavan	€14,500	€68
Clare	€16,000	€95
Cork	€18,000	€234
Donegal	€13,500	€114
Dublin	€25,500	€21
Galway	€14,000	€168
Kerry	€16,500	€126
Kildare	€19,000	€41
Kilkenny	€21,000	€69
Laois	€18,000	€47
Leitrim	€14,000	€49
Limerick	€16,500	€83
Longford	€15,500	€38
Louth	€16,500	€26
Mayo	€12,500	€140
Meath	€18,500	€67
Monaghan	€12,500	€48
Offaly	€18,000	€49
Roscommon	€14,500	€77
Sligo	€13,500	€52
Tipperary	€20,000	€139
Waterford	€22,000	€50
Westmeath	€17,500	€56
Wexford	€19,500	€82
Wicklow	€21,500	€44
State	**€16,500**	**€2,018**

Source: *Department of Agriculture, Food and the Marine.*

Table 6 *Total Payments (Direct and Capital, incl. TAMS) to Farmers by DAFM by Province in 2022*

County	Average Farmer Payment	Total Payments by Province € Million
Ulster	€13,544	€229 million
Munster	€17,811	€726 million
Leinster	€18,933	€577million
Connaught	€13,572	€486 million
State	**€16,281**	**€2.018 billion**

Source: *Department of Agriculture, Food and the Marine.*

Note

While every effort has been made to ensure the accuracy of the data contained in this publication, in view of the volume of statistical data, some errors may occur. Where these anomalies are identified, the Department will liaise to amend as required.

Acknowledgement

Economics and Planning Division wish to thank all who contributed to the Annual Review and Outlook 2023, with thanks in particular to Teagasc and the Central Statistics Office.

Notes:

Notes: