



2022

Annual Report & Financial Statements



Introduction

The 2022 Annual Report is built around the goals outlined in the Teagasc Statement of Strategy. Examples of key achievements and developments for the Research, Knowledge Transfer and Operations directorates are described in the context of these goals.

Contents

Introduction	2
Chairman's Statement	3
Report of the Director	5
Authority Members	8
Senior Management	8
Organisational Chart	9
Office Locations	10
Irish Agriculture since Accession to the EEC in 1973: A Survey using National and Teagasc NFS data	11
Goal 1 - To support improvements in farmers' living standards and well-being	27
Goal 2 - To enhance the production and processing of safe, nutritious and flavoursome foods in line with sustainable circular bioeconomy principles	41
Goal 3 - To provide science-based evidence and technologies to enable Ireland meet commitments in regard to gaseous emissions, water quality and biodiversity	45
Goal 4 - To ensure, through science-based innovation, healthier soils, animals and people	50
Goal 5 - To constantly improve organisational excellence and efficiency in the delivery of our services	55
Consolidated Financial Statements	63

Mission

To provide scientific leadership and support to Irish farmers and food companies in achieving a sustainable food system.

A sustainable food system (SFS) is a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised.

Vision

For Teagasc to be a globally recognised leader in developing innovative sciencebased solutions for the sustainable transformation of our land resources into products and services for the benefit of society. Teagasc is registered as a charity, under Section 40 of the Charities Act 2009. Registered Charity Number: 20022754.

Chairman's Statement



Teagasc Chairman Liam Herlihy

Perhaps the defining moment in 2022 was when Russia illegally invaded Ukraine on February 24. Following so soon after the worldwide epidemic this had a major impact on the world economy, agriculture in particular. Farmers here and abroad had to deal with very substantial cost pressures, with major inflation in key inputs taking place, largely on foot of the war in Ukraine but also associated with supply side problems following COVID-19.

There were substantial increases here in the price of fertiliser, concentrate feed, energy, contracting charges and overhead costs. Many farms saw their cost of production increase in 2022 by about one-third compared to the 2021 level.

However, farm output prices also increased in 2022. The largest increases occurred for milk and cereal crops, which rose in 2022 by close to 50% and 40% respectively compared to 2021. Price increases for weanlings, finished cattle and lamb were more modest. Weather conditions in 2022 were less favourable than normal for Irish agriculture's grassland systems, but were excellent for Irish tillage systems, particularly around harvest time.

In combination, these output price increases and the rise in production costs produced a mixed outcome for incomes across the various farm systems. The large increase in milk and cereal prices was more than sufficient to address the increase in production costs on dairy and tillage farms, but cost pressures resulted in a fall in incomes on many other farms.

The average family farm income for Dairy farms in 2022 increased by 53%, to just under €151,000. This increase in income can be entirely attributed to the rise in milk prices, as there was almost no change in milk output volume in 2022 compared with 2021. Fertiliser use fell slightly on dairy farms due to high fertiliser prices. A dry summer also limited grass availability and, even though feed use

increased, milk yields fell slightly. However, this yield reduction was offset by a small increase in herd size in 2022. While the increase in dairy incomes was substantial, it must be remembered that there are almost 1.5 family labour units required on the average farm, so farm income is not the same as farmer income. This should be taken into consideration in the context of the high income being generated in this system.

The average family farm income on tillage farms also increased by 32% to just under €77,000 in 2022. Both the illegal invasion of Ukraine and unfavourable weather conditions in key production regions, limited grain availability internationally and pushed up global grain prices. However, favourable grain production conditions in Ireland actually boosted yields in 2022.

On Cattle Rearing farms there was a considerable effort to limit the increase in costs, by reducing the volume of fertiliser and concentrate feed use. This limited the increase in production costs on these farms to 13%, the lowest cost increase of any of the farm systems. However, a 10% increase in weanling prices was insufficient to cover this increase in production costs and the average family farm income in the Cattle Rearing system fell by 13% in 2022, to about €9,400.

Other Cattle farms (mainly finishers) fared a little better than cattle rearing farms. While their costs increased by almost one-third, the rise in finished cattle prices of 15% was sufficient to result in an increase in the average family farm income for the Cattle Other system of 9% in 2022, to about €18,800.

Among the grassland systems, sheep farms had the most challenging year in 2022. Their costs increased by 24%, while there was only a 2% rise in lamb prices. This resulted in a reduction in the average family farm income of 21%, to about €16,500.

Averaging across all of the farm systems, the average family farm income in 2022 was just over €45,800, an increase of over €11,000 on the 2021 level. However, this increase in average income was driven almost entirely by the large increase in Dairy and Tillage farm incomes in 2022. The increase in average income hides the fact that over half of cattle and sheep farms experienced an income reduction in 2022. However, many drystock farmers work off farm. Overall, 57% of farm households had an off farm income source in 2022.

The very high rate of general inflation in 2022, at about 8%, was another factor that farm households had to contend with. As with incomes elsewhere in the economy, this elevated rate of inflation has eroded the purchasing power of nominal farm incomes.

While rampant inflation has unexpectedly re-emerged as a major problem, tackling climate change remains the key challenge facing the world. The launch of the Teagasc Climate Action Strategy in December was a key landmark. There are three significant initiatives being taken by Teagasc, and supported by the Department of Agriculture Food and the Marine and other partners, to support farmers and the agriculture and food sector in addressing the climate challenge we all face.

- A Signpost Advisory Programme
- A Sustainability Digital Platform
- A Virtual National Centre for Agri-food Climate Research and Innovation

These key initiatives will provide the tools needed over coming years for the sector to meet its climate targets.

Donald Scully was appointed to the Teagasc Authority in January 2022. He brings great experience and knowledge of farming and agriculture to the Authority, both personally and through the network of the ICMSA.

In conclusion, I would like to thank Professor Frank O'Mara and all Teagasc staff for their efforts in what has been an extraordinarily challenging year. The unexpected disruptions to worldwide agricultural production and markets in 2022 show that food supplies cannot be taken for granted. The role of Teagasc in supporting farmers to produce in a sustainable way is more vital than ever.



Teagasc Director Professor Frank O'Mara, Minister for Agriculture, Food and the Marine, Charlie McConalogue, Siobhan Jordan (Teagasc) and Teagasc Chairman Liam Herlihy at the launch of the Teagasc Climate Action Strategy.

Report of the Director



Professor Frank O'Mara, Teagasc Director.

In 2022, Teagasc continued to make a major contribution to the agri-food industry through its advisory, education and research services. Our advisory service supported almost 44,000 contracted clients and disseminated relevant advice and technical information to all farmers through events, our freely accessible website and social media channels as well as print, radio and TV media. Over 4,000 students participated in Teagasc education in our own four colleges and the three private colleges we support, as well as through distance and part-time education provided through our regional advisory structure. In addition Teagasc education supported 1,378 students from Institutes of Technology and Technological Universities. Our research service published 663 peer-reviewed papers and signed contracts for €31 million of new publicly funded research projects, as well as providing extensive policy support to government, and technical and innovation support to industry. Staff in all these services and in the central operations team worked very hard to deliver these outputs in a year that started with continuing impacts from the Covid pandemic.

One positive outcome from that pandemic was the introduction of a Homeworking Policy in Teagasc which has the potential to provide major benefits to staff and the organisation over the coming years. Another sign of the return to normality was the return of major events which for Teagasc included Beef and Sheep Open Days at Grange and Athenry, the National Ploughing Championships in September where Teagasc had a strong presence with all aspects of Teagasc activities represented, with an emphasis on our environmental research. Teagasc also had a major Horticulture stand at Bloom.

One of the most significant developments for Teagasc in 2022 was the launch by Minister McConalogue of our Climate Action Strategy in December, which sets out how

we will support farmers and the agri-food industry to take action to combat climate change and achieve the sectoral target which is a 25% reduction in agricultural emissions by 2030. We are stepping up our resources and ambition so that we can effectively lead the research, advisory and education support that will be crucial to success. There are two key asks of Teagasc: we must accelerate the development of new and additional technologies and secondly, we must support farmers to adopt the technologies in the Marginal Abatement Cost Curve (MACC) over the next few years and to take advantage of the opportunities in diversification options like forestry, organics, anaerobic digestion and solar.

Our strategy is about enabling us to deliver on those two key asks. As part of our strategy, we are launching a new Signpost Advisory Programme to support farmers with adoption and diversification, we are establishing a new virtual research and innovation centre to accelerate the development of new climate smart technologies, and in a partnership with ICBF and Bord Bia, we are developing a new sustainability digital platform called AgNav to allow us to benchmark emissions and in time, sequestration at individual farm level, develop an improvement plan, and track progress. We will also incorporate climate into our education programmes.



In 2022, we also supported the work of the Food Vision Dairy and Beef & Sheep groups established by the Minister to develop sectoral plans to tackle emissions. Other significant developments that will support farmers to tackle climate change and other aspects of sustainability include the launch of the DairyBeef 500 programme (to complement the FutureBeef programme for suckler farming which was launched in late 2021) and the initiation of a new dairy beef demonstration farm in Tipperary in partnership with Dawn Meats and Shinagh Farm Estates. In addition, Teagasc appointed six new organic advisors and an additional specialist to support the expanding organic sector, which is one of the government's main diversification options.

Other environmental issues like water quality and biodiversity remain to the fore, with the Agricultural Sustainability Support and Advisory Programme (ASSAP) providing targeted advice and the Agricultural Catchments Programme (ACP) researching water quality at a catchment scale. The Teagasc Hedgerow Week is an important initiative to encourage hedgerow planting and better management of existing hedgerows, which contribute to biodiversity and climate objectives, illustrating the interconnectedness of these issues

In 2022, a big effort went into supporting farmers to deal with the dramatic increases in input costs, especially fertiliser and feed, resulting from the Russian invasion of Ukraine and supply chain issues. A campaign was mounted to ensure best use of organic manures and judicious use of chemical fertilisers. Minister McConalogue established a National Food and Fodder Security Committee, and Teagasc extensively supported the work of this committee by providing up to date information on grass growth, fodder stocks, market developments especially pertaining to the pig and poultry sectors which were particularly severely affected.

In the end, there was a 14% reduction in fertiliser use across the country, but adequate fodder was conserved, and rising prices for farming produce helped farmers to cope with the increased input costs, particularly in the dairy and tillage sectors. The reduction in nitrogen fertiliser use contributed to reduced gaseous emissions which is welcome, but it is important that soil fertility is maintained, and technologies like clover, liming, low emissions, slurry spreading and precision application of fertilisers are used to compensate for lower fertiliser nitrogen.

The Common Agricultural Policy (CAP) and national supports are critical to the incomes of many farmers. The first major scheme of the new CAP Strategic Plan, the ACRES scheme opened for applications in 2022, and in a very narrow window for applications, Teagasc advisors supported 14,000 farmers to apply to this scheme, which will have a significant environmental benefit as well as providing an important income boost over the next five years.

Animal source foods play a very important role in providing high quality food and nutrition, as well as being a source of income and employment for many. Ruminant animals (cattle and sheep) have the benefit of being able to turn fibrous forages and by-products into edible foods. Animal production does produce greenhouse gas emissions and can have other environmental impacts which must be minimized. Teagasc hosted an important international conference on the Societal Role of Meat, at which the Dublin Declaration of Scientists was launched which called for a balanced view, informed by science, on the future of animal agriculture.

As well as supporting farmers, Teagasc provides a lot of support to the food processing sector through targeted research, pilot plant facilities, specialised testing and technical support and training. Twenty five new collaboration agreements funded partly or wholly by industry were signed, involving 36 companies. Teagasc also reported a steady increase in annual consultancy service agreements: 65 in 2022 compared to 53 in 2021. These combined figures demonstrate the depth and breadth of Teagasc engagements with industry and other clients for 2022. FoodWorks, a collaborative programme between Teagasc, Enterprise Ireland and Bord Bia that aims to develop high potential start-ups, celebrated its

10th anniversary. The Teagasc chlorate testing consultancy success story was selected as 2022 Knowledge Transfer Ireland "Industry Engagement" Impact Award Winner. This award celebrated significant impact from Teagasc consultancy to three companies, which was key to developing world class chlorate testing capabilities of benefit to Irish dairy industry.

Teagasc relies on income generated from our activities across advisory, education and research. Competitive funding awards are particularly important in research, allowing the hiring of funded post doctoral and contract staff and also funding many Walsh Scholarships.

Teagasc was very successful in competitive research funding in 2022, and EU funding is a particular success story. As of the end of 2022, in Cluster 6, among all participant organisations from all countries, Teagasc is ranked 6th for number of projects funded and 7th for total funding awarded. In Ireland, Teagasc is ranked 5th for total funding awarded from Horizon Europe. This research will provide a lot of very valuable knowledge in the coming years.

Post doctoral scientists are a key group within Teagasc and we launched a new Post Doctoral Development Programme in collaboration with University College Dublin in 2022 to help ensure our Post Docs have a valuable experience with us which will enhance their career development. At the end of 2022 there were 212 active Research Walsh Scholars in Teagasc and contributing to their education is a key capacity building activity of Teagasc. Many initiatives were taken to ensure a good experience for these Walsh Scholars including induction days, international training awards, creation of an image repository, new video promotional material and a Fulbright-Teagasc Scholarship. Teagasc increased the stipend for Walsh Scholars by €1,000 as an interim measure while we await the outcome of the National review of state supports for PhD researchers.

Education is a very important service provided by Teagasc. A good education can set up our future farmers for successful careers in farming, as well as establishing links with Teagasc that last well beyond their time in our education service. We are continuously developing and improving our Education service. In 2022, a huge amount of work was carried out in preparation for the introduction of a number of apprenticeships across horticulture, agriculture and equine. These are a very important development for the sector and future apprentices. Another important development was a review of the important and popular Practical Learning Period part of our programmes, which led to a number of improvements being introduced. Teagasc colleges have established reputations for excellence over many years and in 2022, Kildalton College celebrated a major milestone with its 50th anniversary, which saw the return of many former pupils and retired staff.

Teagasc has a very diverse workforce, and celebrating and harnessing the benefits of this diversity by ensuring everyone feels included and part of the mission of Teagasc is a high priority for me as Director. To generate greater momentum, Teagasc declared 2022 as the 'Year of Diversity and Inclusion' where the Senior Management Group with the assistance of the HR team and Diversity and Inclusion Working group sponsored a number of new events, training activities and a diversity culture audit. The culture audit, using a tool from Inclusio, provided Teagasc with a deep insight into the profile of staff, their needs and what additional supports they require. Staff completed on-line training, watched diversity related short videos and they completed surveys on organisational culture through the Inclusio tool. Following the month long audit, we developed a seven point action plan where we focused our resources on supporting staff and providing three training modules to all managers. For the first time Teagasc celebrated Pride month in June of 2022 by running webinars, raising the flag and coordinating local events in our centres. Teagasc finished off the year by publishing our first Gender Pay Gap Report which is showing a positive trend where the gap has reduced from 18% to 12%. The impact of our female leadership programme, and new gender related policies is also reflective of our increase in females holding senior positions, now at 25%. Lots done but more to do in this area.

With the ending of Covid-19 restrictions during 2022, there was a substantial increase in the level of activity. There was a €4.567 million increase in externally funded research project income compared to 2021. Knowledge Transfer income increased by €7.959 million (39%) including an increase of €4.7 million in advisory services income due to the ACRES scheme and income of €844,000 was recorded for reimbursement of the costs incurred in accommodating Ukrainian refugees in two Teagasc colleges. Current expenditure, excluding pensions, was €167 million in 2022 which was €16 million more than in 2021. There was an increase of 38 in the average number of staff employed, and with general public sector pay increases, the 2022 pay bill of €93 million was €6.7 million (7.8%) more than in 2021.

General operating expenses of €50 million were €7 million greater than 2021 with increases in spending on maintenance and repairs, stationery, publicity, canteens, farm supplies etc. due to increased activity. Inflation rose sharply in 2022 impacting fuel, energy and fertiliser prices in particular. During the year Teagasc invested €7 million in progressing 48 construction projects in support of upgrading its capital infrastructure. This included the completion of a Food Biotest Research Facility supporting the Food Research Programme in Moorepark, Fermoy along with design works on a €12.7 million National Agriculture Sustainability Research & Innovation Centre in Johnstown Castle. Construction work commenced on a new €3 million research facility in support of the Vista Milk Programme in Moorepark, Fermoy.

In 2022, Teagasc's energy performance improved by 11.2% while CO₂ emissions decreased by 7.6% both keeping us on our glide path projections to meet 2030 energy and decarbonisation targets. This was in part as a result of investment in Solar PV installations in several locations along with the rollout of a national upgrade to LED lighting.

Another very important development for Teagasc was the launch of our Digital Transformation Strategy with three key initiatives. This include the aforementioned Digital Sustainability Platform called AgNav (developed in collaboration with ICBF and Bord Bia), a Client Management Platform and a Data Value Platform. We depend so much on digital tools and systems, and it is important to keep investing in this area.

During 2022, Teagasc continued to lead substantial dairy focused development projects in east African countries – Kenya, Tanzania and Eritrea. The projects are primarily focussed on collaborating with local institutes to support the development of forage based dairy production systems and the dairy value chain.

Finally, none of these initiatives and developments would have happened without our hugely dedicated and hard working staff and management team. I want to sincerely thank them all for their work during the year. I would also like to thank our Teagasc Authority for their support and guidance, and the Department of Agriculture, Food and the Marine for the on-going support and resources they provide to Teagasc which indicates confidence in us to deliver our mission. And lastly, our stakeholders, partners and collaborators provide huge support and encouragement to us and we greatly value the very positive relationships we have with them all.

Teagasc Authority Members



Mr. Liam Herlihy (Chair)



Mr. John Buckley



Ms. Eilís O'Connell



Ms. Martina Donnelly



Mr. Patrick Duffy



Prof. Gerald Fitzgerald



Prof. Thia Hennessy



Ms. Elizabeth Reynolds



Mr. Brian Rushe



Mr. Donald Scully



Mr. Liam Woulfe

Teagasc Senior Management



Prof. Frank O'Mara
Director



Prof. Pat Dillon
Director of Research

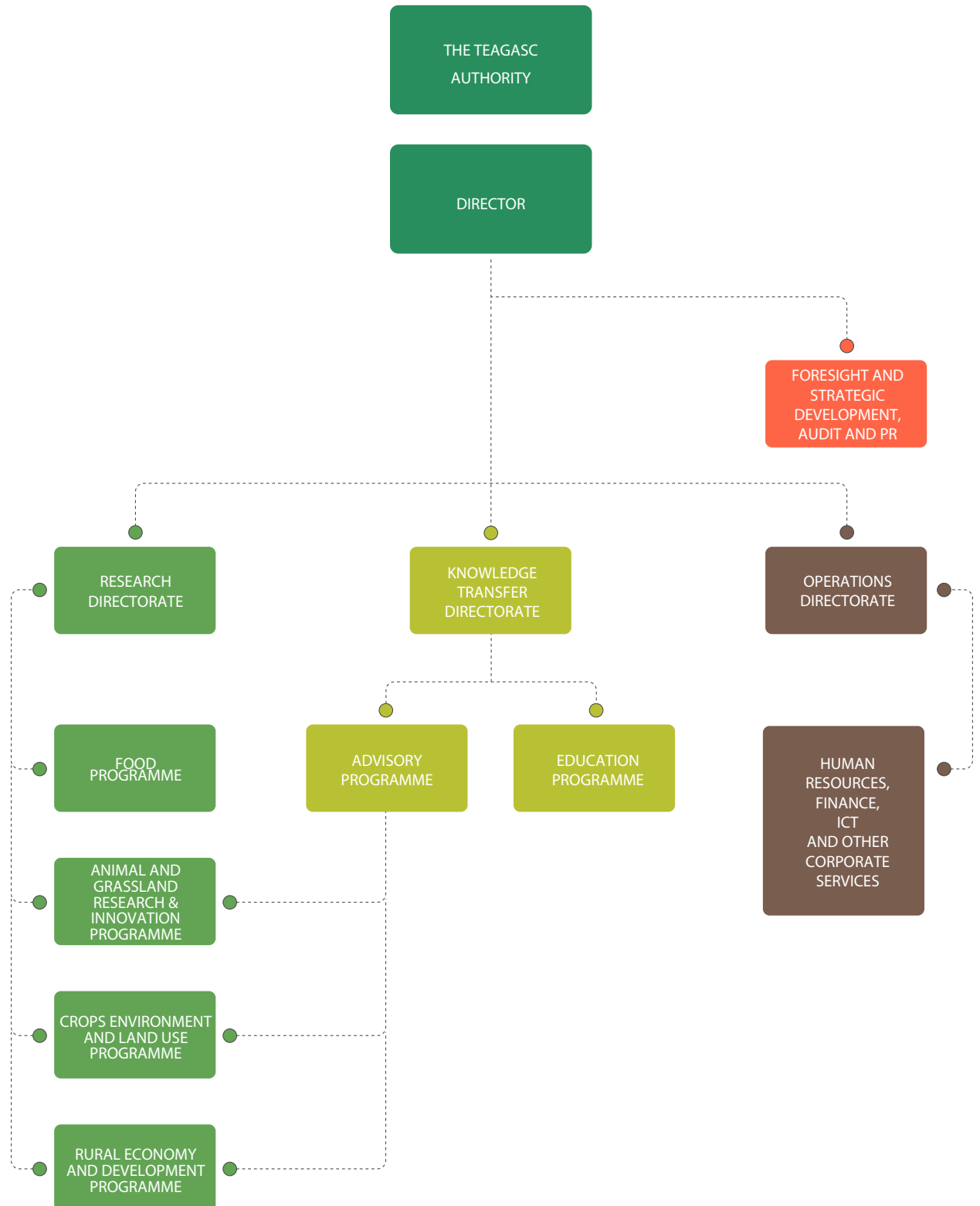


Dr. Stan Lalor
Director of Knowledge Transfer

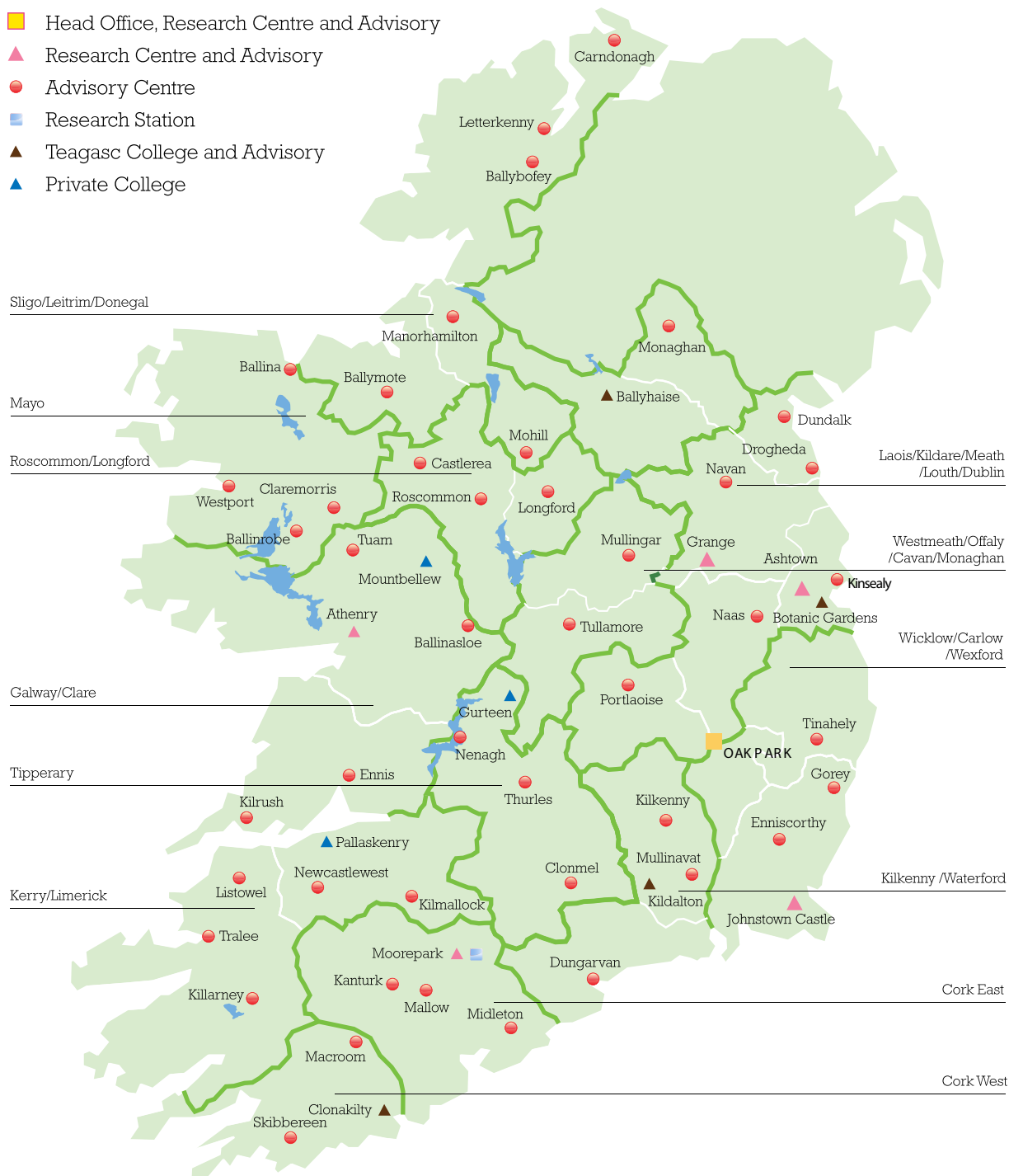


Mr. Alan Phelan
Chief Operating Officer

Organisational Chart



Teagasc Offices & Centres



Irish Agriculture since Accession to the EEC in 1973: A Survey using National and Teagasc NFS data



Kevin Hanrahan

Rural Economy Development Programme

When Ireland joined the European Economic Community on January 1, 1973, it was the conclusion of a lengthy process. Ireland had applied to join the EEC in 1963 and again in 1967, and finally acceded following its third application in 1971. The economic development opportunities offered by EEC membership to the Irish agriculture and food industries were a significant factor motivating Ireland's applications.

Irish agriculture, the Irish food manufacturing industry and the broader Irish economy had remained highly dependent on the UK market since independence. Particularly for agricultural and food products, the UK in the post-war era was seen as an inferior (lower price) market as compared to the developing common market of the EEC.

The EEC, through the development of the Common Agricultural Policy (CAP), had created a European market for agricultural and food goods that was protected by a high common external tariff. Within this market agricultural output prices were supported at levels higher than those prevailing in the UK and Ireland. Membership of the EEC offered the prospect of higher prices and incomes for Irish farmers and the prospect of accelerated economic development for the wider Irish economy.

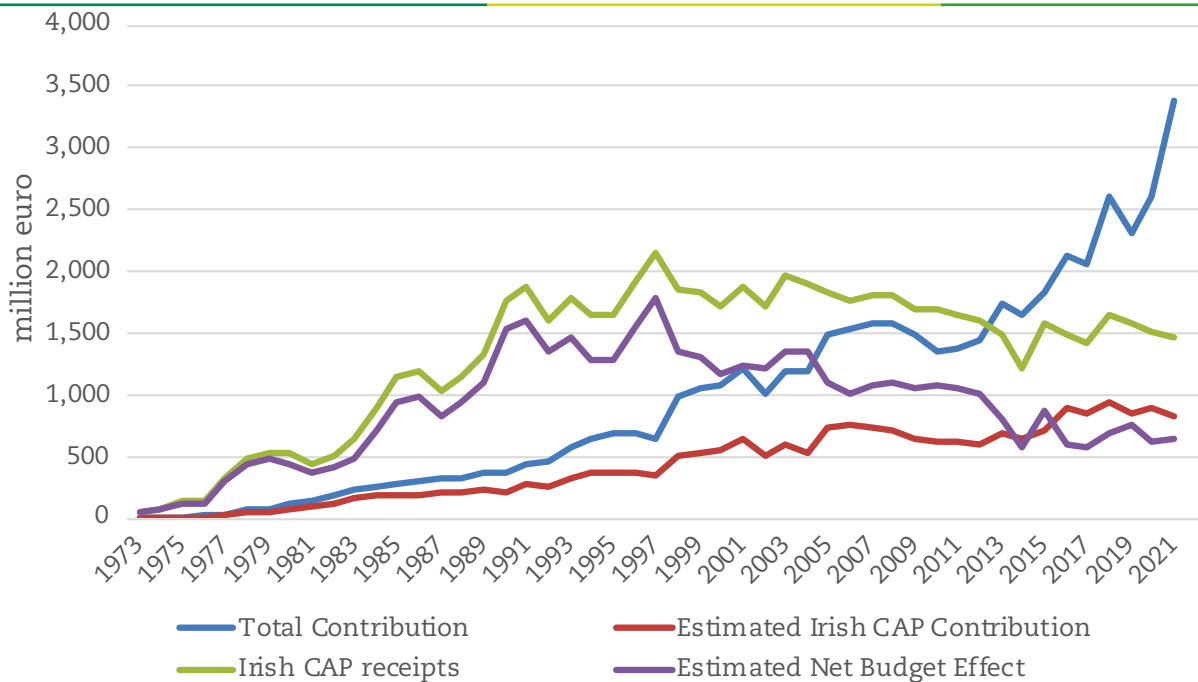
Evaluating the importance of membership (ex post) of the EEC/EU to the Irish agriculture and food industries is complicated by the absence of a counterfactual. If Ireland had not acceded to the EEC what prices would Irish farmers have received? If Ireland had not joined the EEC and seen its agricultural policy determined (and largely funded) at a European level, what agricultural policies would Ireland have implemented?

What we can be confident about is that for most of the last 50 years the output price environment within which Irish agriculture has operated has been positively affected by EU membership. Farmers have benefited from a “terms of trade” effect. We can also point to the large scale fiscal transfers that Irish agriculture has received from the European Union's Budget, a “*budget effect*” of EU membership via receipts under the Common Agricultural Policy.

There can be little doubt that CAP payments have supported farm incomes to a degree that most likely would not have been possible had such payments to be fully financed by the Irish exchequer. Since 1973 the total value of receipts from the CAP amount to over 65 billion euro in nominal terms. Discounting Irish contributions to the EU budget, the cumulative net budget effect is estimated to have amounted to over 44 billion euro between 1973 and 2021 (DAFM 2008 and EC 2022).

While the past 50 years of membership of the EEC and EU have almost certainly been a positive for Irish agriculture and food industries as compared to the counter-factual of non-accession, the question remains: How has the Irish agriculture sector and Irish farming fared since 1973?

This essay attempts to provide that perspective using data from the Central Statistics Office (CSO), Eurostat (the statistical office of the European Union) and the Teagasc National Farm Survey (NFS). Unsurprisingly others have also surveyed the experience of the Irish agriculture sector within the EEC/EU over the years, notable contributions are those of Frawley and Commins (1996), Hennessy and Kinsella (2013) Kearney (2010), Matthews (1982, 2000a, 200b, 2003) and Sheehy (1980).

Figure 1 Net Budget Effect from CAP

Source: DAFFM Compendium of Irish Agricultural Statistics (2008), Annual Review and Outlook Reports and European Commission (2022)

Many of the developments within the agriculture and food sectors of the Irish economy surveyed in this essay reflect developments in wider Irish society and economy. These, as well as the CAP and other European Union policy developments, such as the Single Market programme, have profoundly affected the development of the Irish agriculture and food industries (see Ó Gráda and O'Rourke (2022), for an overview of the last century of Irish economic history).

In this essay we will first compare the structure of Irish farming in 1975 and 2020 and highlight how the size and composition of the Irish farm population has changed over the first 50 years of EU membership. This is followed by a review of the development of the Irish agricultural economy since 1973 using CSO and Eurostat statistics. The essay then switches to a farm level focus and describes the evolution of Irish family farm incomes over the half century of Ireland's EU membership using Teagasc NFS data.

Irish agriculture in 1973 and 2023

The Irish agriculture and food industry of 2023 is, in some respects, unrecognisable from that of 50 years ago. However in others, such as in the continued dominance of cattle and dairy production in aggregate Irish farming activities and agricultural and food industry output, there are notable continuities.

In 1975, two years following accession, the Central Statistics Office (CSO) conducted the first Farm Structures Survey (Eurostat, 1997) as a member of the EEC. Irish farms were categorised using a newly developed European farm typology that allocated farms to different farm "types" based on their dominant economic activity. These data and waves of data from subsequent Farm Structures Surveys and Censuses of Agriculture allow us to chart how the structure and make-up of Irish farming has changed over the intervening five decades.

In 1975 there were more than 220k farms in Ireland with an average farm size of just under 23 hectares (Eurostat 2000). As is clear from Figure 2, the current dominance of grazing livestock farm systems in Irish agriculture (see Figure 2) was clearly an established feature of Irish agriculture on accession to the EEC.

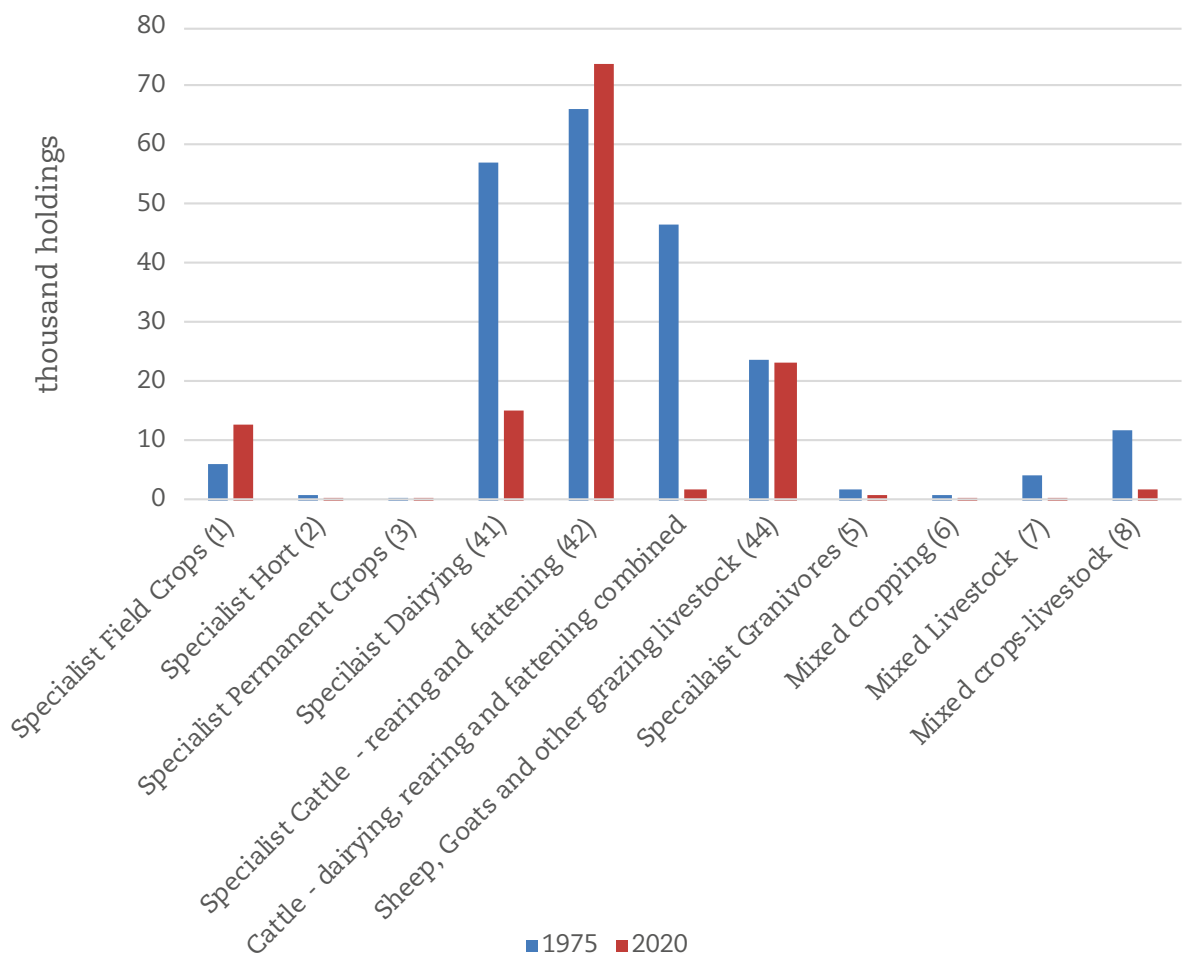
A number of developments in the structure of Irish farming since accession stand out from Figure 2. One is the dramatic decline in the prevalence of mixed grazing livestock farms. Farms categorised as belonging to the "cattle- dairying, rearing and fattening combined farm type (43)" in 1975 accounted for almost a quarter of the farm population.

By 2020 this farm system had almost disappeared as farms either exited agriculture or specialised in one or other of "cattle rearing and fattening" or "specialist dairy" farming. Since 1975 the number of farms specialised in dairying has also dramatically declined. In 1975 there were over 50 thousand farms categorised as specialised in dairying, by 2020 this had fallen to just over 15 thousand.

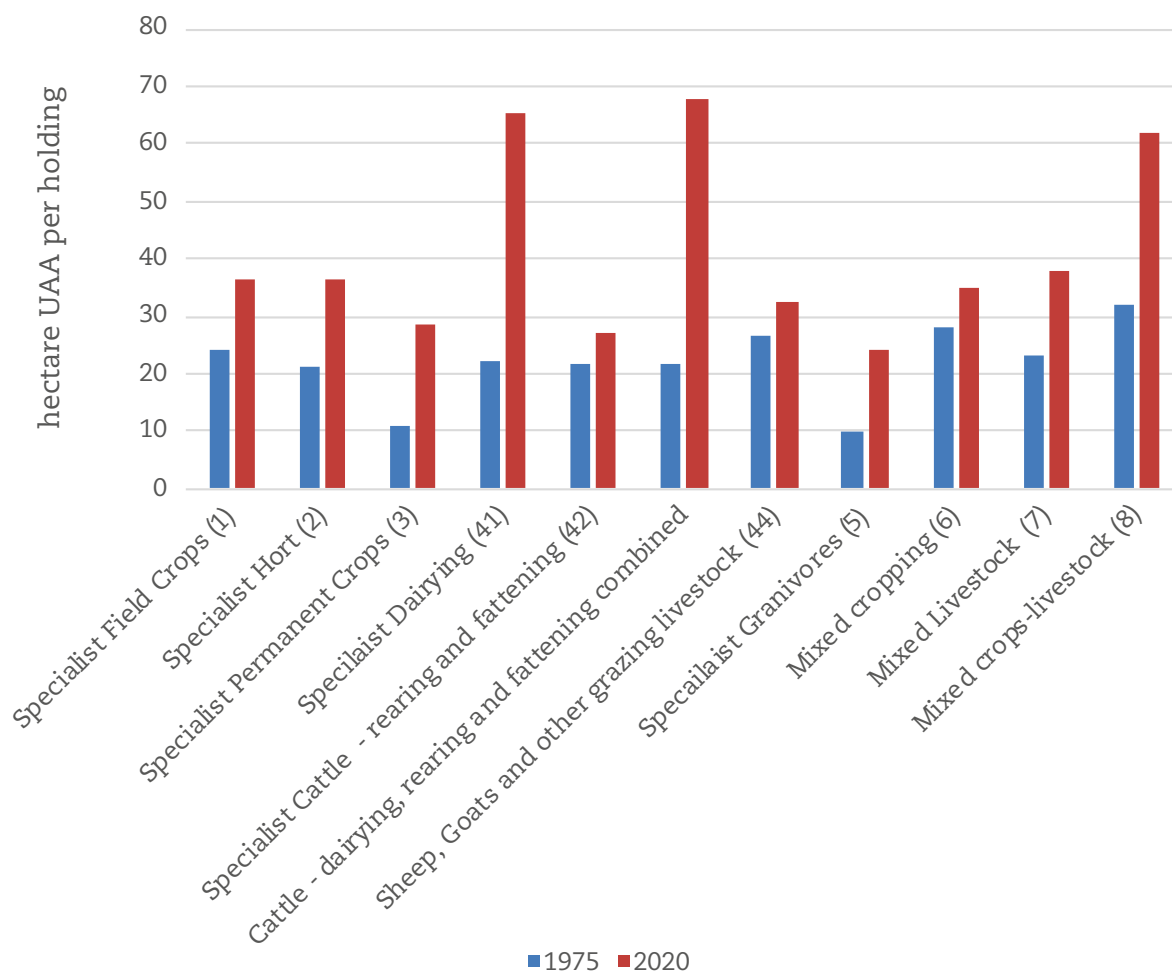
In contrast to the decline in the number of dairy farms, the number of farms specialised in cattle rearing and fattening in 2020 is higher than it was in 1975, while the number of farms specialised in sheep production is almost equal to that in 1975.

In 1975 the average farm size across the different farm systems did not differ dramatically from the overall average farm size of 23 hectares. The decline in the number of farm holdings, particularly in the number of smaller farm holdings, over the following three decades was associated with an increase in the average farm size, in particular an increase in the average size of farms specialised in dairying. The average size of farms specialised in dairying increased from less than 23 hectares in 1975 to over 57 hectares by 2020. By contrast, the average size of farms specialised in the rearing and fattening of cattle increased from 21.5 hectares in 1975 to 27.2 hectares in 2020.

Figure 2: Irish Farms by farm type (1975 & 2020)

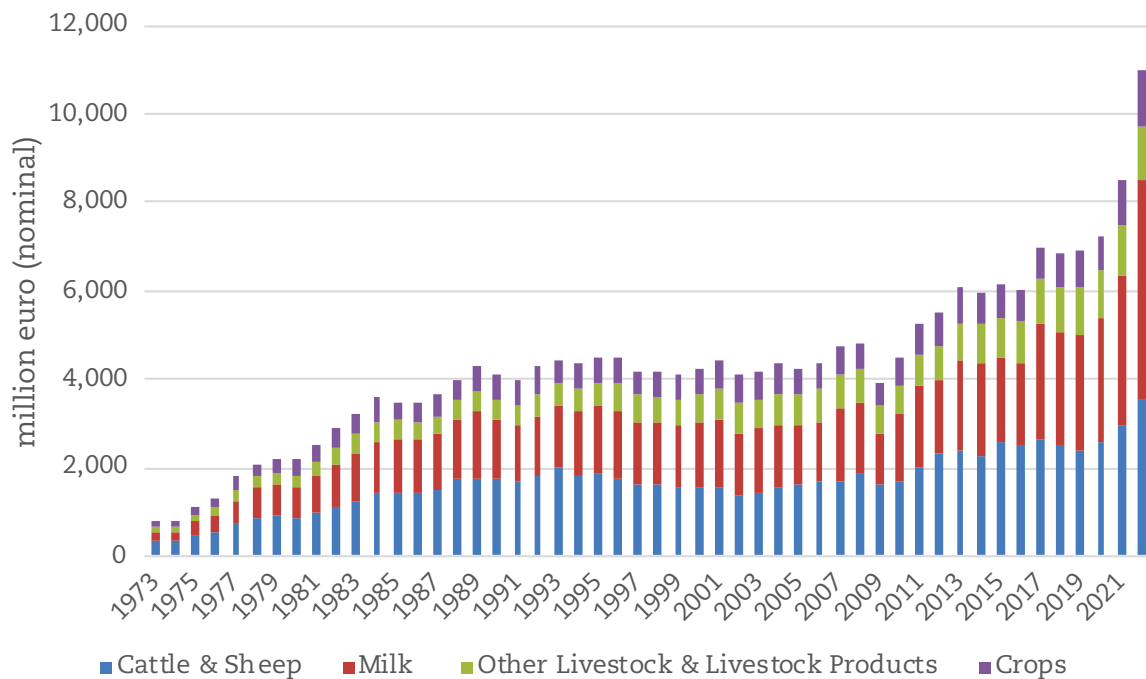


Source: Eurostat (2000) and Eurostat dataset EF_M_FARMLEG

Figure 3: Average farm size by Farm type (1975 & 2020)

Source: Eurostat (2000) and Eurostat dataset EF_M_FARMLEG

The dominance in 1975 and 2020 of farms specialised in grazing livestock within the farm population and in total agricultural land utilisation is reflected in the national agricultural accounts. When Ireland acceded to the EEC milk and grassland based meat output (cattle & sheep) accounted for 71% of agricultural sector output. In 2022, milk and meat (cattle and sheep) output accounted for 77% of agricultural output value at producer prices (exclusive of forage crop output).

Figure 4: Agricultural Output at Producer Prices (Nominal)

Source: CSO historical dataset ASBA (see Brady, 1999) and CSO datasets AEA01

Evolution of Irish agriculture; the view using national sectoral statistics

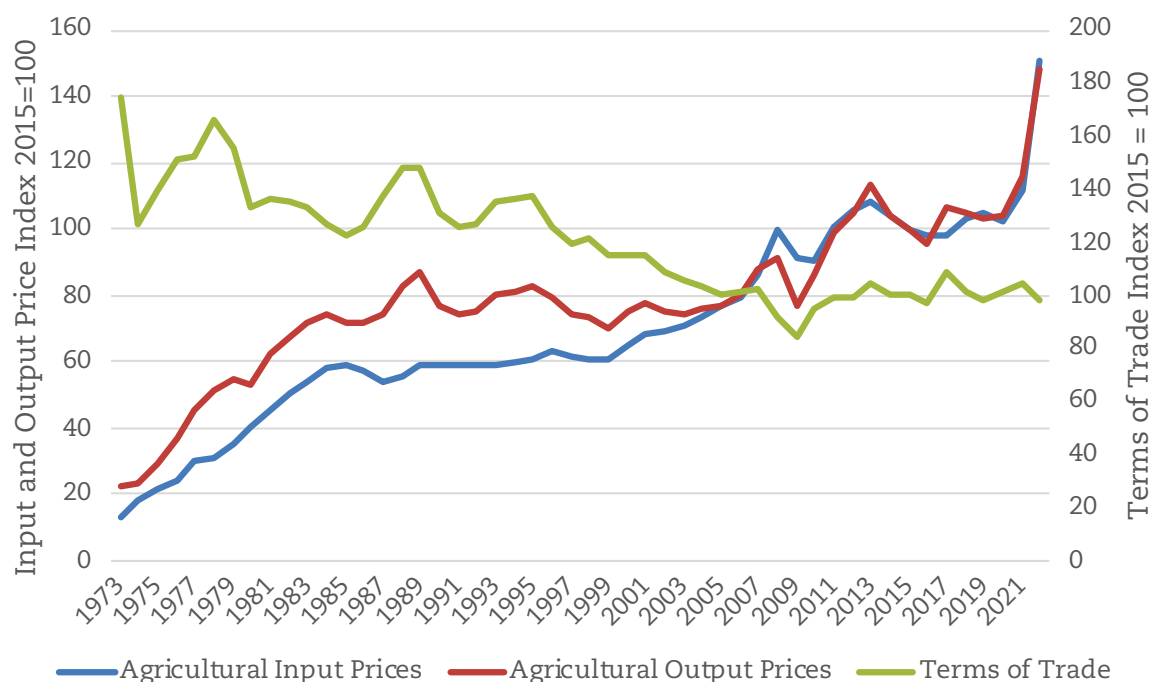
How agricultural sector income has evolved since 1975 reflects the changes in structure of farming in average farm size and total labour use. The evolution of incomes also reflects the changes in output and input prices faced by farmers and how they responded to these price signals, policy incentives and constraints.

In Figure 5, data on agricultural output and input prices (represented by indices with 2015=100) are shown. Over the last 50 years both agricultural output and input prices have increased, reflecting both the impact of EU membership and the CAP on agricultural input and output prices and the influence of inflationary developments in the wider economy.

Ireland joined the European Monetary System in 1979 and the associated tightening of monetary policy and contractionary fiscal policy in Ireland and elsewhere facilitated a transition to a lower inflation environment. This process of re-anchoring economy wide inflationary expectations was associated with economic recession, high unemployment and in Ireland high rates of emigration. The transition to a lower inflationary environment coincided with a change to CAP policies that constrained growth in support prices and during the late 1980s and 1990s this was reflected in more stable agricultural output prices.

Following the MacSharry reforms of the CAP in 1992 direct payments, rather than institutional price supports and associated intervention purchases and provision of export subsidies, came to provide support to Irish and EU farm incomes. As is shown in Figure 5 the rate of growth in agricultural input prices over the first 35 years of membership generally outpaced growth in output prices and as a result Irish agriculture's terms of trade declined.

Since the recovery from the Global Financial Crisis Irish agricultural input and output prices have largely matched each other in terms of rates of growth. Irish agriculture's terms of trade have, as a consequence, been largely stable despite very large changes in both input and output prices over the last decade.

Figure 5: Agricultural Input and Output Price Indices (2015 =100)

Source: CSO datasets AHA01, AHA02, AHA03 and AHA04 and Brady (1999).

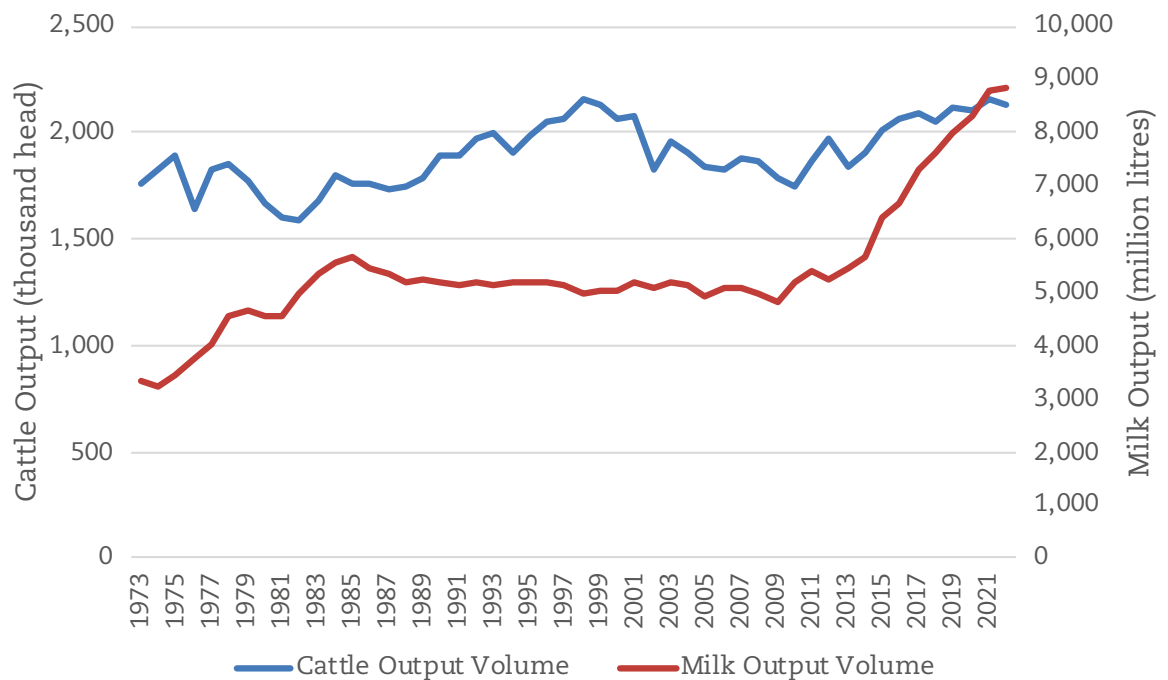
How did the volume of agricultural output produced by Irish agriculture respond to the input and output price signals illustrated in Figure 5? How did the policy incentives created by the CAP direct payments system between 1973 and 2022 affect agricultural production?

The evolution of milk and cattle output volumes produced by Irish farmers since 1973 are shown in Figure 6. Following accession to the EEC, Irish cattle output (slaughter and live exports) declined, as higher costs of production more than offset the positive impact of higher cattle prices. In contrast, Irish milk output and output of cereals grew dramatically in the immediate aftermath of accession as higher real output prices for milk and cereals spurred strong growth in output.

The initial phase of strong milk volume growth was brought to a halt by the imposition of the milk quota system in 1984. The introduction of direct income support payments coupled to cattle production led to some growth in cattle output through the late 1980s and 1990s despite the contraction of the dairy cow herd.

However, limits on the number of coupled subsidy payments, the provision of agri-environmental payments, and the decision to decouple direct payments from production in the 2003 CAP reform led to a period of slowly declining cattle output from 1998 until 2010.

In 2008 the EU decided to relax the milk quota system from 2011 onwards and to fully remove restrictions on production from 2015. Irish dairy farmers responded to this change in European agricultural policy by increasing production for the first time in over 20 years. As a consequence Irish milk output has grown dramatically from 2011 onwards (Figure 6).

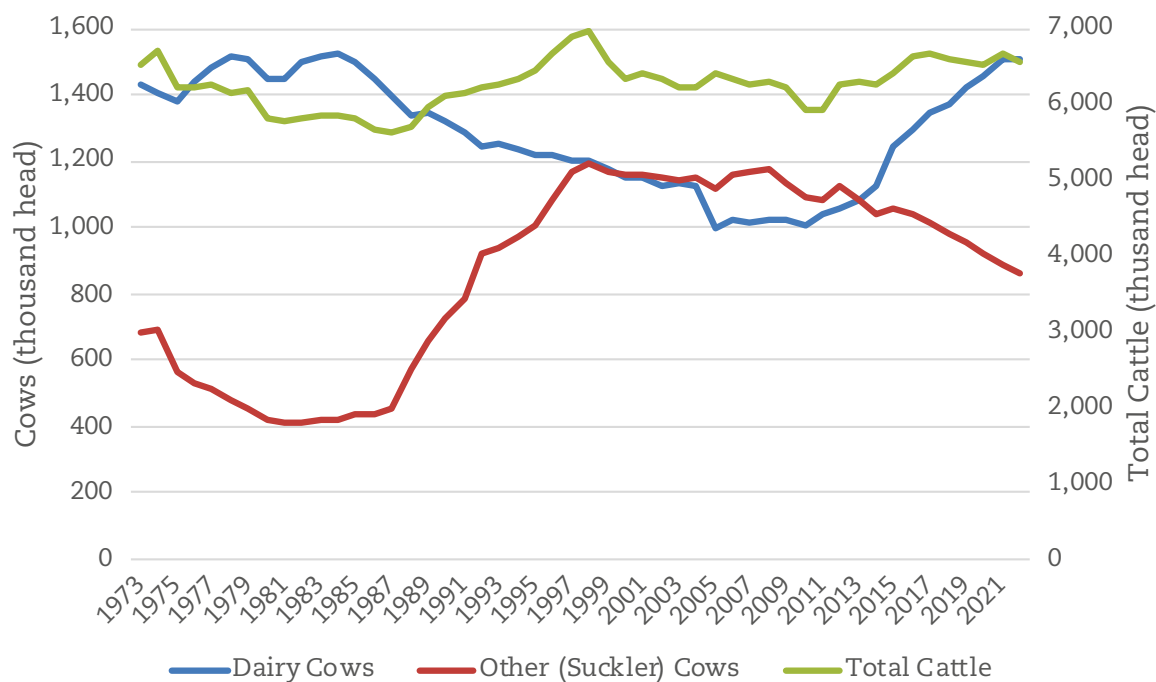
Figure 6 Cattle and Milk Output Volume 1973 - 2022

Source: Historical CSO dataset ASBA and CSO dataset AEA02.

Note: The time series for milk output volume does not account for the higher solids (fat and protein) content of milk delivered.

The growth in the volume of milk produced in Ireland following the ending of the milk quota era was based both on increasing yields per cow, but also on growth in the dairy cow herd (see Figure 7). Increases in the fat and protein content of milk has also increased significantly since the abolition of quota. The Fat content of Irish milk increased by almost 9% between 2011 and 2021, while Protein content increased by over 5% (Eurostat, 2022). The higher solids content of milk increases its value to milk processors as the volume of butter, cheese and other commodities that can be produced per litre of milk delivered is increased.

The increase in the number of dairy cows following the ending of the milk quota system more than offset the negative impact on Irish cattle production of the contraction in the suckler cow herd. The decline in cattle output volume from 1998 to 2010 has been effectively reversed since 2011, with the overall volume of cattle output as well as beef carcass output approaching levels observed in the late 1990s.

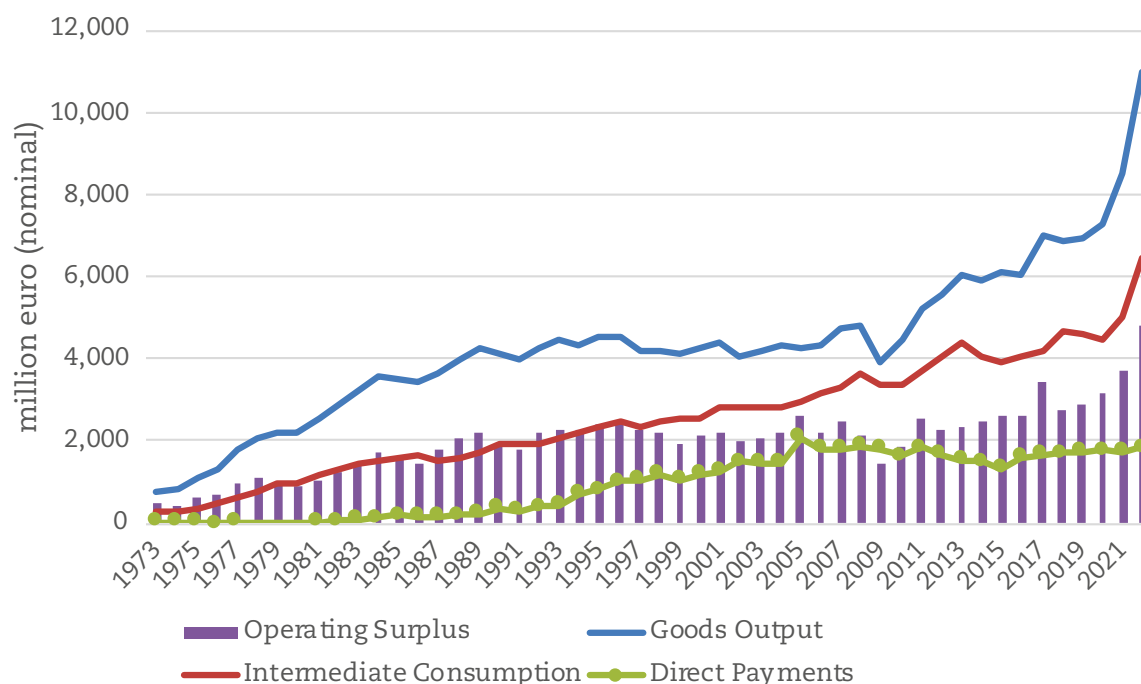
Figure 7 Irish Cow and Cattle inventories (December) 1973-2022

Source: Eurostat dataset **APRO_MT_LSCATL**.

In summary, the national level sectoral data highlight that periods of sustained sectoral output growth occurred in the decade following accession to the EEC and during the decade since the relaxation and subsequent abolition of the milk quota system. For much of remaining 30 years of EU membership sectoral output growth was constrained by either EU agricultural policy instruments or because the economic returns available from the market place were insufficient to lead to significant output growth. The evolution of milk production volumes and dairy cow numbers has and continues to be a key determinant of sectoral output growth.

Despite consistently low levels of profitability, coupled direct payments to cattle and sheep production through the late 1980s and the 1990s supported growth in aggregate cattle and sheep production. In terms of overall agricultural output volumes the decline in the dairy herd under the milk quota system (as yields per cow grew) during the 1980s and 1990s offset the growth in cattle output from a growing “national” suckler cow herd.

By 2010 cattle output volume and milk output volumes were both at levels close to those recorded when the milk quota system was introduced in 1984. The abolition of the milk quota system in 2015 and a period of higher agricultural output prices globally, and stable agricultural terms of trade, has been reflected in increases in agricultural output value and agricultural sector income over the last decade of EU membership.

Figure 8: Irish Agricultural Output, Input, Net Subsidies and Operating Surplus (1973-2022)

Source: CSO dataset ASBA and CSO dataset AEA01

The growth in operating surplus (sectoral income) evident in Figure 8 is in nominal terms only, and the increasing importance of direct payments in sectoral incomes is clearly apparent. The share of subsidies in sectoral income exceeded 100% in 2009.

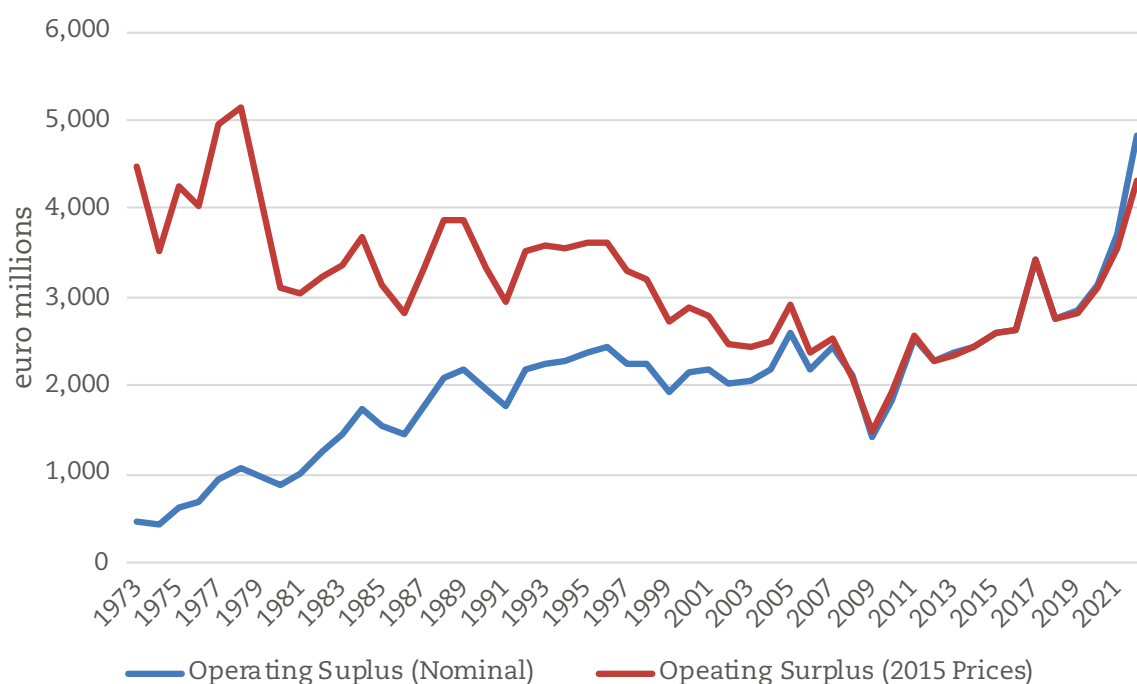
When account is taken of the reduced purchasing power of money over time, the positive sectoral income performance over the first 50 years of Ireland's membership of the EU looks somewhat less impressive and closely reflects the evolution in the physical volume of agricultural output over the period since 1973.

The highly inflationary environment of the 1970s and early 1980s eroded the real economic impact of increases in nominal sectoral income. Over the period from 1973 to 2010 the trend in real sectoral income was negative (see Figure 9). The abolition of milk quotas in 2015, and the response of the Irish farming sector to this change in agricultural policy, has been reflected in the first period of sustained real sectoral income growth in Irish agriculture since the earliest years of EEC membership.

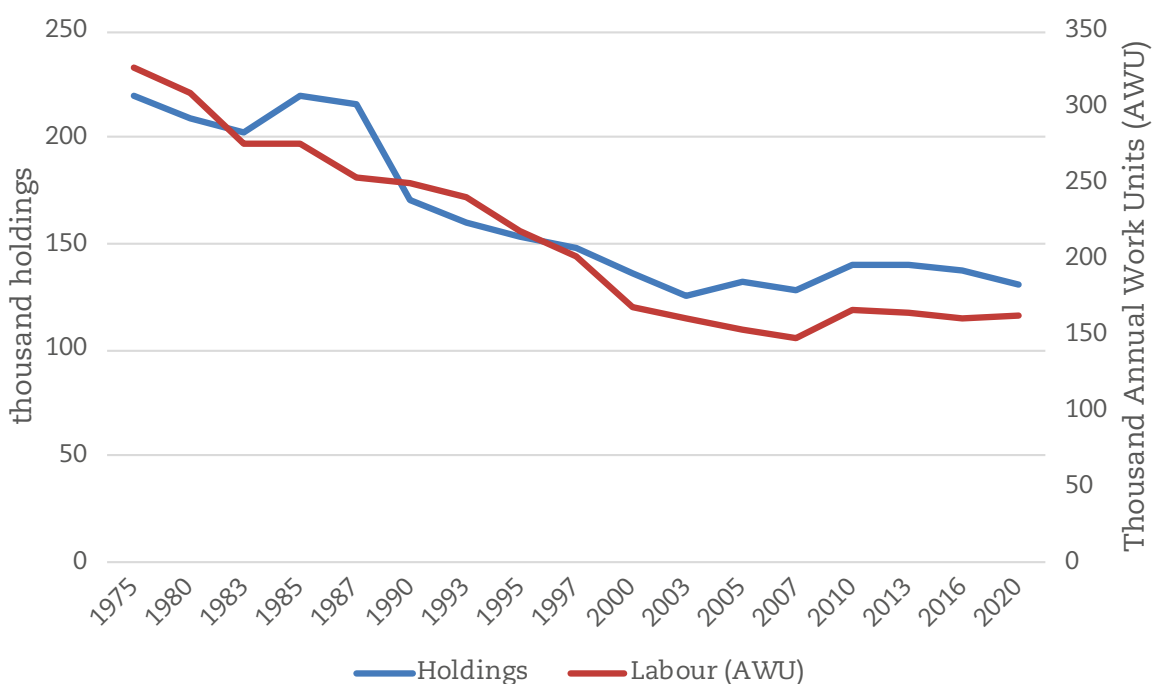
The processes of structural change in Irish agriculture have meant that trends in sectoral economic performance do not necessarily translate into farm level outcomes. Over the first 50 years of EU membership the number of holdings and quantity of labour used in agriculture have contracted (see Figure 10) and output per annual work unit employed in agricultural (an important partial productivity indicator) has increased.

For the first 30 years of EU membership the rate of structural change in Irish agriculture was relatively rapid with a large decline in the number of farms and in the quantity of labour used in agricultural production (see Frawley and Commins for a discussion). The rate of exit of both farms and labour from agriculture has, however, effectively halted over the last 20 years. This structural development represents an important break in the trend established over the first 30 years of EU membership where, despite support for farm incomes from the CAP, low relative incomes in agriculture encouraged a process of consolidation within the agricultural sector.

Numbers of farms specialised in cattle rearing and fattening are largely unchanged since the 1991 Census of Agriculture while the number of specialised dairy farms in 2020 is one third of the number in 1991. It is likely that the buoyant non-farm economy and the continued provision of direct income supports coupled to control of agricultural land, has encouraged farm households to remain in agriculture and for farm labour to be retained within the sector, even if increasingly on a part time basis.

Figure 9: Nominal and inflation adjusted Sectoral Income (Operating Surplus)

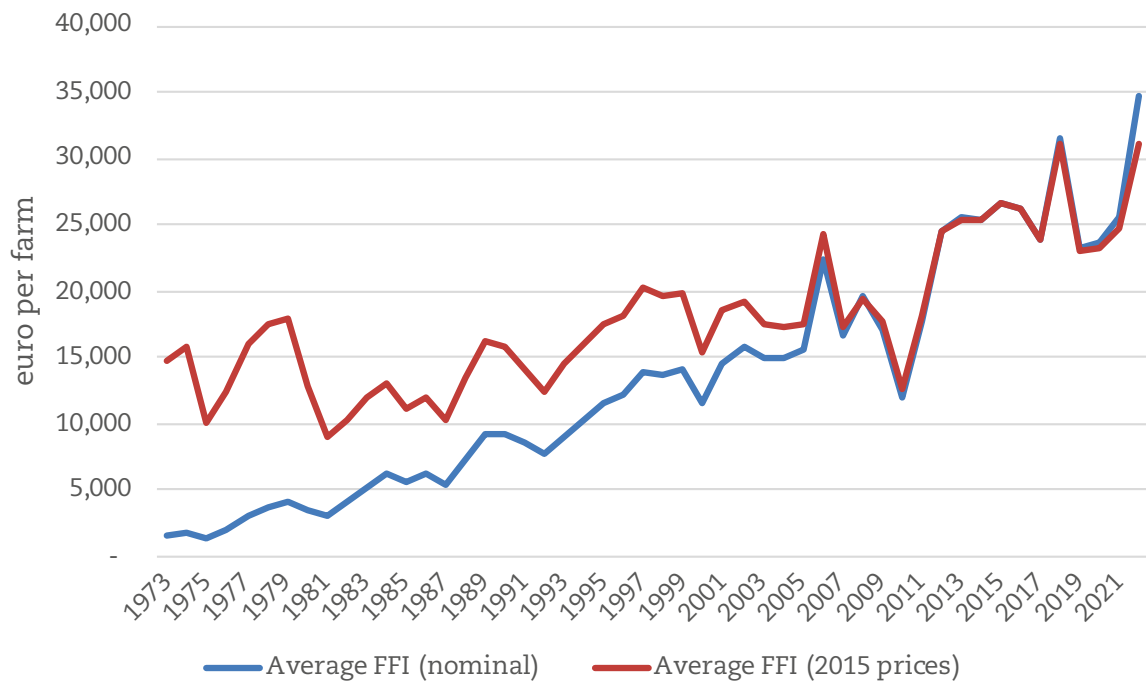
Source: CSO Historical dataset ASBA, AEA01 and CPA04 and elaboration thereon.

Figure 10 Total number of farms and Agricultural labour Input (Annual Work Units) 1975-2020

Source: Eurostat (2000) and Eurostat datasets EF_OV_KVFTAA, EF_M_FARMLEG

Developments in Family Farm Incomes 1973-2021

The trends in sectoral income (Figure 9) and in farm numbers and the volume of labour used in agriculture (Figure 10) are reflected in the evolution of average family farm income as measured by the Teagasc National Farm Survey (NFS) since Ireland's accession to the EEC in 1973.

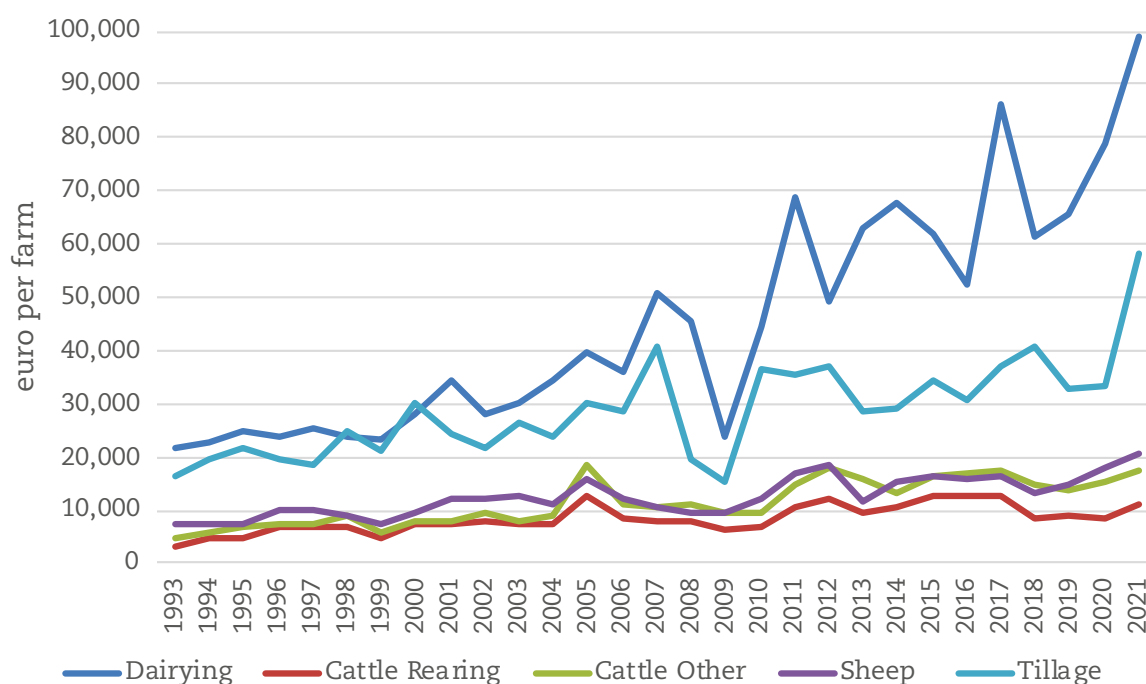
Figure 11 Nominal and inflation adjusted average Family Farm Income (FFI) 1973-2021

Source: Annual Teagasc National Farm Survey Reports 1973 to 2022 and CSO dataset CPA04.

The trends in average farm level income (FFI) since 1973 reflect the patterns established using the aggregate sectoral data discussed to this point. While the nominal value of average farm income grew through the first 40 years of membership, when account is taken of inflation, the real value of average family farm income per farm, as measured by the Teagasc NFS, grew more slowly, and generally remained between €15,000 and €20,000 when measured in 2015 prices.

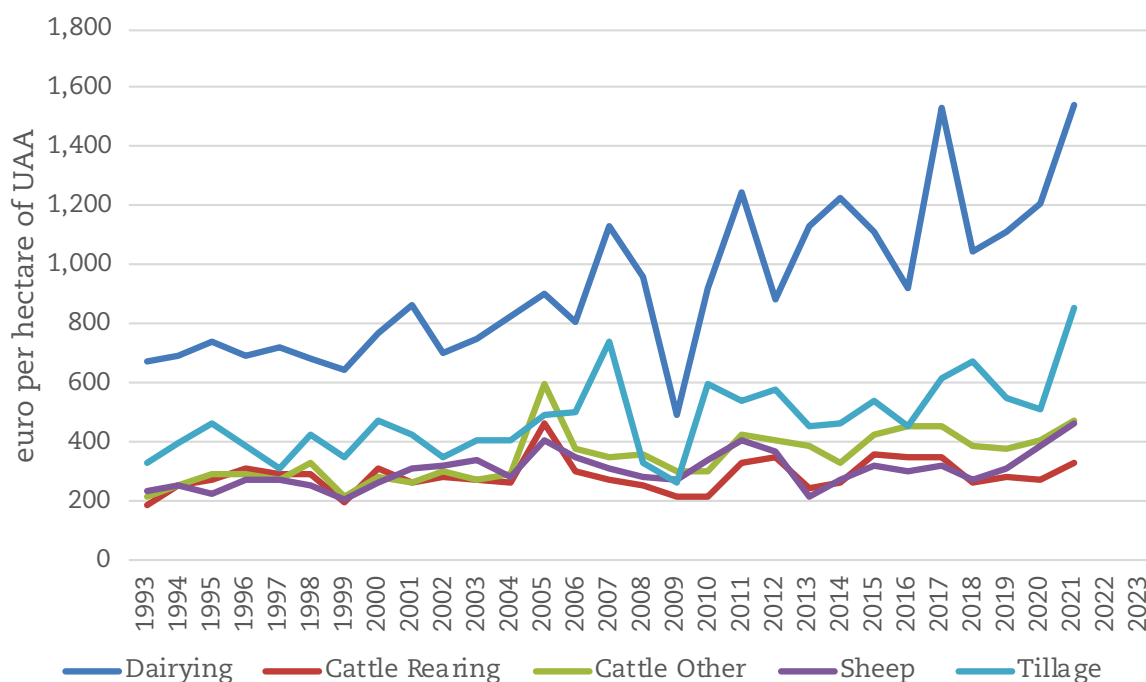
Since the abolition of milk quotas average family farm incomes have increased. This increase has largely been a function of the strong improvements in average incomes earned by dairy farms. This points to the increasingly divergent income performances of the different types of farms that make up the Irish farm population.

Since 1993 the farm system typology used in the annual reports of the Teagasc NFS has been unchanged with six farm systems identified (Dairying, Cattle Rearing, Cattle Other, Sheep, Tillage and Mixed Livestock farms). The evolution over time in average FFI by farm system, in particular income performance per hectare and per family labour used, illustrate how different farm systems' economic performance has evolved over time.

Figure 12 Average Farm System Incomes (current) by NFS Farm System 1993-2021

Source: Annual Teagasc National Farm Survey Reports 1973 to 2022

While all farm system incomes have grown in nominal terms since 1973, as is clear from Figure 12, the level of average FFI per farm earned by different farm systems have diverged from one another. This divergence reflects different rates of change in the physical size of different farm types (reflecting structural change processes) and more recently in the rates of growth in the volume of agricultural output produced per hectare on different types of farms.

Figure 13 Family Farm Income per hectare of Utilised Agricultural Area 1993-2021

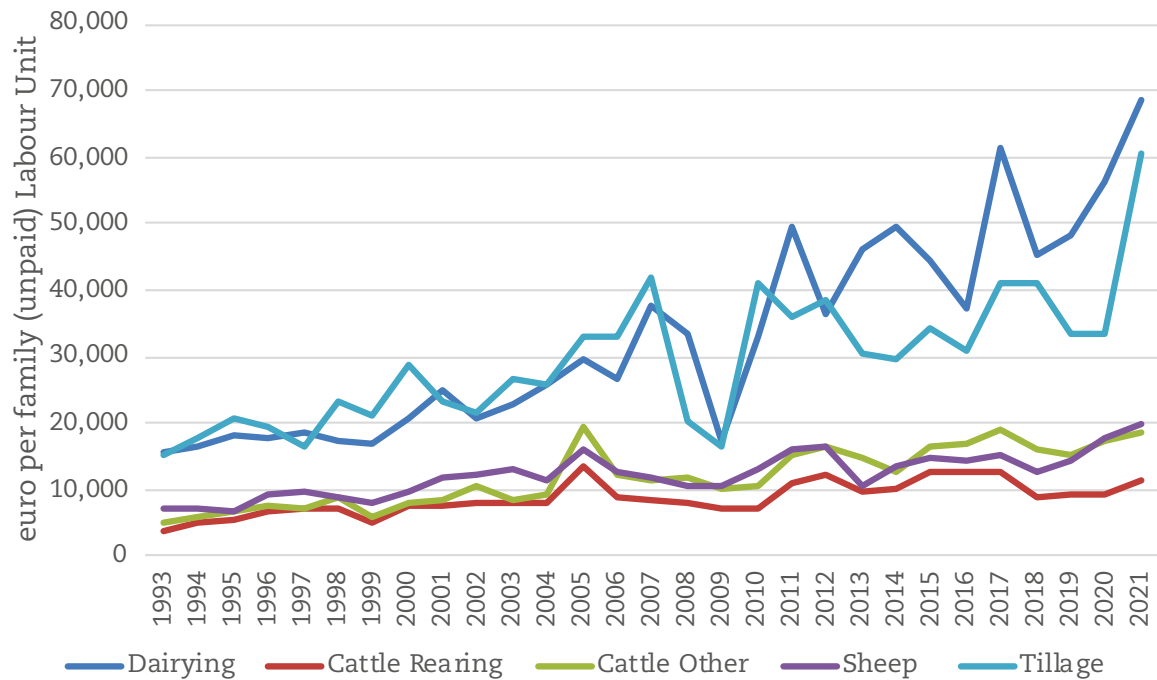
Source: Annual Teagasc National Farm Survey Reports 1973 to 2022

Dairy farm output volume, output value and FFI per farm have grown dramatically since 2011. Output and income earned per farm on other farm systems have remained relatively stable. Figure 13 shows the evolution of FFI per hectare for the principal five systems reported by the Teagasc NFS.

If we express the FFI data from the NFS on a per family labour unit basis the superior performance on the dairy system relative to the tillage system (see Figures 12 and 13) is reduced due to the relatively higher volume of labour used on dairy farms. The income per unit of family labour in these two systems has, for all of the period since 1993, remained at multiples of the income per family labour unit earned on drystock farming systems.

While the rates of growth in the nominal value of income per family labour unit used on drystock farm systems have only marginally lagged behind those achieved on tillage and dairy farms, the larger level of the incomes on dairy and tillage systems (reflecting large farm size and profitability per hectare) has meant that the absolute gap in incomes earned per labour unit between dairy and tillage farms on the one hand and cattle and sheep farms on the other, has grown over time.

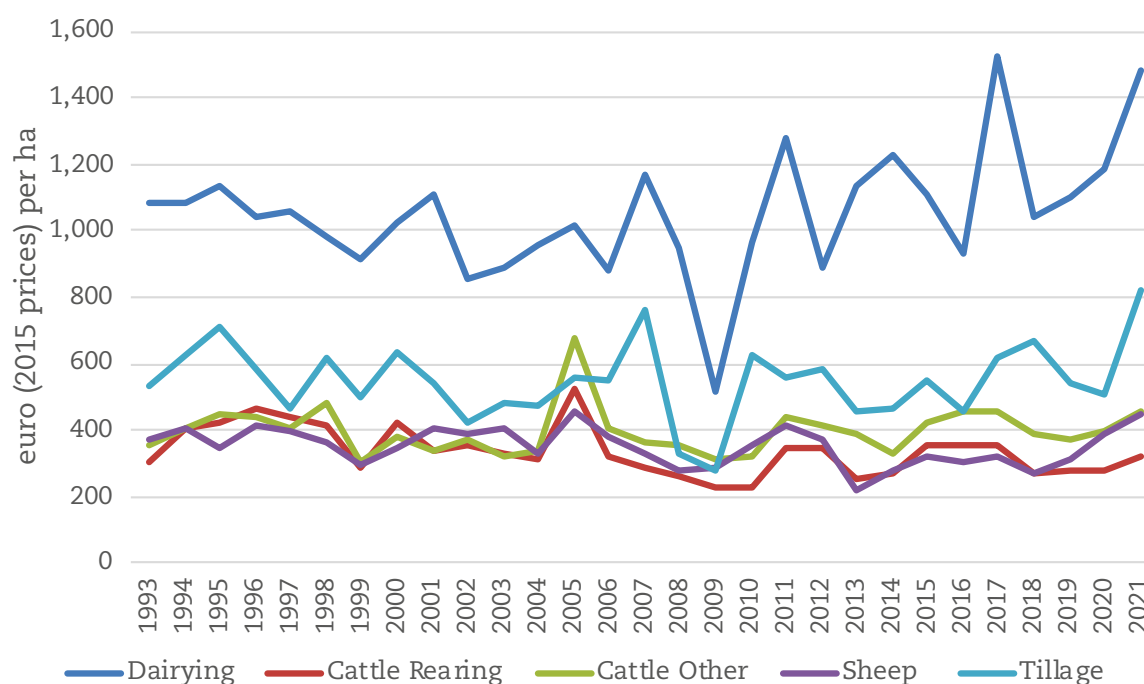
Figure 14: Family Farm Income per Family Labour Unit



Source: Annual Teagasc National Farm Survey Reports 1973 to 2022

Though the general inflationary environment over the last 30 years has been relatively benign, at least until 2022 and 2023, the rate of consumer price inflation since 1993 has still been sufficient to erode much of the improvement in family farm incomes illustrated in Figure 12, 13 and 14.

The rate of growth in real (inflation adjusted) family farm income per hectare for all farm systems over the period 1993 to 2021 has been less than 2% per annum. Real income growth per hectare has been lowest on cattle rearing farms and highest on dairy farms. In the period since the abolition of milk quotas the rate of growth in income per hectare on dairy farms has increased, while the rate of growth in real incomes from farming on drystock systems has deteriorated.

Figure 15: Real (Inflation adjusted) Family Farm Income per ha (1993-2021)

Source: Annual Farm Survey Reports 1973 to 2022.

Conclusions

Whether considered at the aggregate sector level using economy wide data from the CSO and Eurostat, or at the farm scale using data from the Teagasc NFS, the real income growth performance of agriculture for most of the last 50 years of EU membership can best be characterised as slow.

The optimism of the early years of EEC membership, where access to the protected European market and supports from the CAP was expected to usher in a golden era of economic development for Irish agriculture may not, ex post, have been fully justified. As we have shown using both aggregate sectoral data and farm level data from the Teagasc NFS, the outcome from a narrow agricultural perspective has been somewhat less gilded. The Irish agriculture sector has benefited from a higher price environment within the EU Single Market and from budgetary transfers from the CAP but these benefits of EU membership have not been sufficient to underpin rates of economic growth at sectoral or farm scales equivalent to rates of growth in the non-farm economy.

The relatively slow rate of growth in incomes from agricultural production relative to incomes in the non-farm economy was reflected over the first 30 years of EU membership in an outflow of labour from agriculture and a change in the structure of Irish farming. Many small farms disappeared and the number of people working in agriculture contracted. However, over the last 20 years of EU membership, continued slow growth in agricultural incomes relative to non-agricultural incomes has not been reflected in further structural change in Irish agriculture. Farm numbers over the last 20 years have remained largely constant and reductions in the quantity of labour used have stopped. The EU Common Agricultural Policy by providing farms with decoupled direct income support has also contributed to the observed stability in agricultural structures. The prevalence of part-time farming has increased and the generally buoyant non-farm economy of the last 20 years has supported the continuation of smaller non-viable farm holdings rather than act as a force hastening their demise.

The prudent price policies of the 1980s and the introduction of direct income support payments in the MacSharry reforms of 1992 halted the growth of internal EU output prices. The milk quota system, introduced in 1984, supported dairy farm incomes, but effectively prevented profitable expansion of milk production until its abolition in 2015.

Coupled direct payments under Pillar I of the CAP, originally introduced to "compensate" for reduction in CAP support prices, were decoupled from production following the Fischler CAP reform of 2003. Over subsequent CAP reform cycles decoupled direct payments have been progressively equalised on a per hectare basis and made increasingly conditional on agri-environmental performance. Agri-environmental schemes under Pillar II of the CAP have since the early 1990s encouraged the maintenance of low intensity models of agricultural production.

The last decade of EU membership has seen renewed growth in the volume of milk produced by Irish farmers as the EU milk quota system was at first relaxed and then formally ended in 2015. The ending of the milk quota system led to a period of sustained real growth in agricultural sector income and in dairy farm incomes. This period of output growth has coincided with increased concern about the impact of agricultural activities on the environment and legal commitments to reduce greenhouse gas emission associated with agriculture and agricultural land use.

What will the next decades of EU membership mean for Irish farmers? Environmental policy, in particular the national climate policy objective of climate neutrality, will increasingly impinge on agricultural activities. Some farming activities will likely be constrained while others may be encouraged by public policy. As in 1973 and 2023, in the future grass based agricultural production systems are likely to continue to dominate Irish agricultural land use and almost certainly milk production and beef production will continue to account for a large, if not the majority, of Irish agricultural output.

It is likely that new agricultural production systems will emerge. We are likely to see the farms specialised in supplying inputs to anaerobic digesters for the production of renewable energy emerge. Other agricultural production systems where farmers are rewarded primarily for production of ecological outcomes (provision of habitats or other natural capital services) may increase in importance in terms of both aggregate agricultural land use and as agricultural income earning activities in their own right.

A key uncertainty about the future of Irish agriculture is whether the stability in total farm numbers and agricultural labour use observed for the last 20 years continues in the medium to longer term. Teagasc NFS data consistently highlight the economic viability challenge faced by many Irish farms. Off-farm labour market participation by farm household members is what allows many of these farm households to remain economically sustainable and active in agriculture. It is possible that structural change, reductions in the number of farm holdings and exit of labour from agriculture, could resume if incomes particularly in drystock farming continue to lag incomes in other parts of agriculture and the wider economy.

Traditionally in economics, productivity growth was seen as the “lever of riches” (Mokyr, 1992); the role of productivity growth in facilitating ongoing improvement in the incomes of farmers will continue, but the centrality of productivity improvement as a means of reducing the environmental impact of farming activities will become increasingly important. Improving the productivity of Irish farming in order to allow the current quantity of agricultural output to be produced with a lower environmental footprint or to allow more environmental output to be produced with as little a negative impact on the volume of agricultural food output will be critical. Teagasc’s education, research, and knowledge transfer activities will continue to be important contributors to Irish agriculture’s success in improving both its environmental and economic sustainability.

As noted in the introduction, the absence of a counterfactual makes it very difficult if not impossible to be definitive about what the Irish agricultural sector would have looked like if Ireland had not joined the EEC in 1973. Membership of the EU and the CAP has been very important for the development and modernisation of the Irish agricultural and food industry. The impact of EU membership on the development of the rest of the Irish economy and on Irish society in general has been at least as important for Irish agriculture and for the welfare of farmers and the wider rural economy as the CAP. The stability of Irish agriculture in terms of farm numbers and labour utilisation, despite the relatively low rates of real income growth in farming, increasingly reflects the success of EU membership in fostering Ireland’s economic development. Membership of the EU and the Common Agricultural Policy may not have solved the classical “farm income problem” in Ireland but it may, via the increased participation of farm household members in non-farm labour markets, have solved the “farm household” income problem while allowing for the development of a modern and efficient agri-food industry.

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Data on Irish Agriculture

All historical data expressed in Irish pounds have been converted to euro equivalents using the fixed conversion factor where €1 = IR£0.787564.

Teagasc NFS Results online dataset has annual data for the period 1993 to 2013.

<https://www.teagasc.ie/rural-economy/rural-economy/national-farm-survey/national-farm-survey-results/>

The annual Teagasc NFS reports for the period 1999-2021 are available from the Teagasc website.

<https://www.teagasc.ie/rural-economy/rural-economy/national-farm-survey/national-farm-survey-reports/>

CSO data from 1990 Agricultural sector Output, Input and Income are available from the CSO data dissemination service PxStat <https://data.cso.ie/product/OIIA>

Data on the economics accounts for agriculture for the period 1973 to 1990 are available from a historical CSO dataset ASBA and are summarised in Brady (1999) and are available in the annual CSO Statistical Abstract publications.

CSO data on historical consumer price indices are available from the CSO data dissemination service PxStat <https://data.cso.ie/product/CPIA>

Eurostat data from Farm Structures Surveys and Censuses of Agriculture from 1990 onwards and on annual agricultural production are available from the agriculture domain of the Eurostat database [Database - Agriculture - Eurostat \(europa.eu\)](https://ec.europa.eu/eurostat).



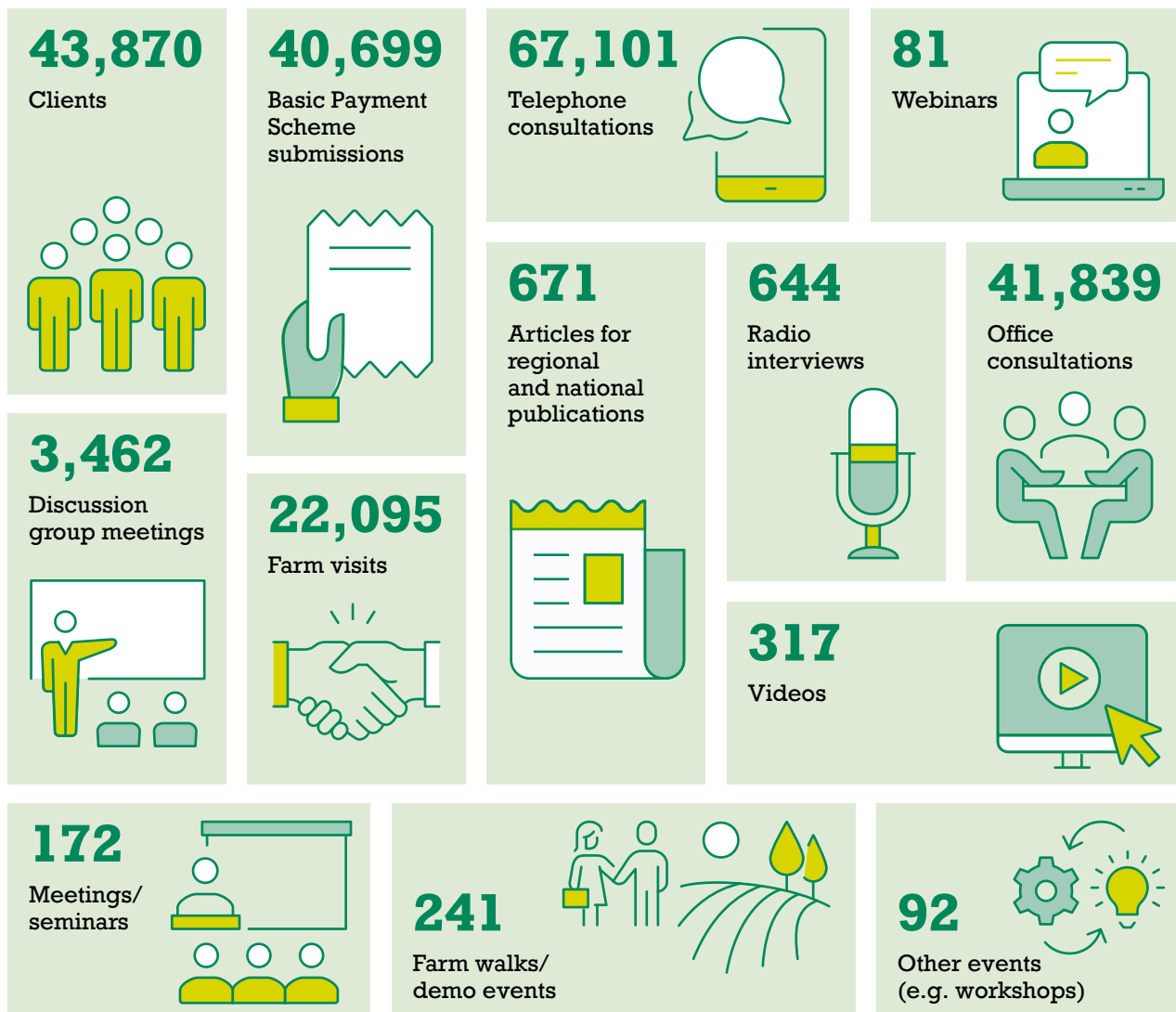
Strategic Goal 1

To support improvements in farmers' living standards and wellbeing.

- Supporting Viable Farming
- Securing Farmer Health and Safety and Wellbeing
- Enhancing Human Capital (Education)
- Supporting Rural Development
- Supporting Overseas Agricultural Development and SDGs

Supporting viable farming

Knowledge Transfer activities by Teagasc regional advisors/specialists in 2022



Grassland Farmer of the Year

Pictured in Teagasc Moorepark, Fermoy, Co Cork at the Grassland Farmer of the Year Awards 2022 are overall winner Diarmaid Fitzgerald, Cratloe, Co. Clare, his parents Sean and Deirdre with sponsors Donal Whelton, AIB, Enda McDonald, Grassland Agro, Michael Berkery, FBD, Charlie McConalogue T.D., Minister for Agriculture, Food and the Marine, Aidan Brennan, Irish Farmers Journal, Prof. Frank O'Mara, Teagasc Director and Liam Herlihy, Teagasc Chairman.

The Grassland Farmer of the Year awards is now in its sixth year and rewards the top grassland farmers in the country who are growing and utilising more grass on their farms in a sustainable manner. The awards are supported by the Department of Agriculture, Food and the Marine with an overall prize fund of €25,000.



Scheme Applications Supported

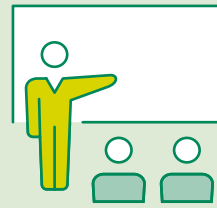
13,037
ACRES



1,221
TAMS



83
Nitrates
Derogation
Courses



320
Hen
Harrier



4,351
Derogation
Applications



6,066
GLAS
Renewals



360
AETS Courses



12,000
Fodder
Scheme



60
Pearl Mussel



2,807
Nutrient Management
Plans



1,208
REAP



200
Wild Atlantic
Nature



60
Burren
Programme



40,699
Basic Payment
Scheme Submissions



Advisor Aoife Forde and weanling-to-store farmer Pat Fitzpatrick from Knockerra, Kilrush, Co. Clare.

Supporting enterprises

As well as generating numerous articles, radio interviews, social media posts, Teagasc enterprise specialists, advisors and researchers contribute to the Teagasc magazine Today's farm, newsletters and website. They also deliver or contribute to other group or public events and mass media:

	Beef	Sheep	Tillage	Dairy
Conferences	National Beef Conference	National Sheep Conference, Hill Sheep Conference	National Potato Conference	National Dairy Conference
Open days	Beef 2022, Grange	Teagasc Athenry. Also on sheep BETTER farms.	Teagasc Johnstown Castle.	Teagasc Ballyhaise
Farm walks (series themes)	Spring beef, breeding	Fertiliser, grazing, clover.	Crop management	Spring clover series, Winter milk week
Other events	National Ploughing Championship presence (NPC), Beef finishing.	NPC	Tillage Forum, World Potato Conference, NPC, Bloom.	National milk quality event, NPC
Workshops	Calving heifers at two years of age	Reducing lamb mortality; preventing antimicrobial resistance	Sustainable Use Fertiliser Use Training programme with ICOS & SkillsNet. Precise Application of Fertilisers	Cell Check; Calf care; Grass measuring for nitrates derogation farms; Heavy soils; Grass10 grazing workshops
eLearning Modules developed	Calving heifers at 24 months		Climate change actions	
Other	Articles, newsletters, videos and social media posts on the progress of the Future Beef and the DairyBeef 500 programmes DairyBeef 500 course: for farmers aiming to improving the profitability and sustainability of their dairy calf to beef systems.		The Enable Conservation Tillage project presented through workshops, crop walks, training programs, In-service Training, seminars and industry events Participated in EU Mission to help Cypriot authorities to reduce pesticide exceedances in food produced in Cyprus. The Teagasc Crop Report: 2,900 users.	

Key programmes

Grass 10

This programme delivered a large number of training courses, weekly Grass10 updates, Grass10 group meetings and the Grassland Farmer of the Year competition.



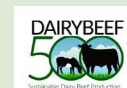
Future beef

This programme focusses on sustainable beef production and media campaigns including media articles and regular updates are delivered from the network of 22 Future Beef farms



DairyBeef 500

Dairy calf to beef farmers are supported through groups in all advisory areas, knowledge transfer campaigns, advanced calf to beef courses and tailored publications.



Horticulture

The Irish horticultural industry is an important economic sector in Ireland. It encompasses vegetables, fruits, ornamentals, flower bulbs, trees, mushrooms and protected crops. In 2022 Teagasc delivered webinars, publications, advice and events in all of these sectors and launched the Teagasc Horticulture Portal for grower clients.

Some key research priorities included:

Replacing peat: The sustainability of peat based growing media and mushroom casing in horticulture is the focus of the 'Beyond Peat' project, which has been funded by DAFF.

Food waste: Teagasc participates in the Leaf No Waste team, which is led by Technological University Dublin (TU Dublin) is developing a novel approach that has the potential to address food waste by combining plant fortification with sustainable compostable/biodegradable packaging to enhance the shelf life of fresh produce.

Securing Farmer Health and Safety and Wellbeing

The Teagasc health and safety programme uses the Total Health Model encompassing research and knowledge transfer through media, education, training and advice. Teagasc works closely with the Health and Safety Authority. Activities include:

- Half-day courses on completing and implementing the Farm Safety Risk Assessment Document.
- Teagasc Health and Safety exhibits at major national Teagasc events.
- An eLearning module produced under contract for the Department of Agriculture, Food and the Marine. Videos on Managing Farm Health and Safety produced in association with FBD Insurance and the HSA.
- The EU Horizons Safe Habitus project, led by Teagasc, was launched in December.
- A major study related to Cardiovascular Health Gain – Farmers have Hearts - was published in 2022.
- A Masters in Agricultural Innovation Support (MAIS) co-funded by H.S.A. on increasing engagement of advisors and farmers in health and safety advice was completed by Penny Gavin.

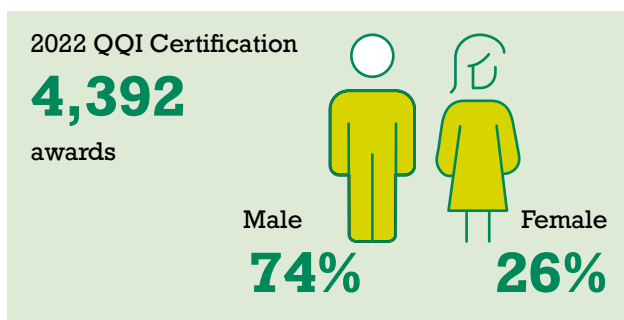
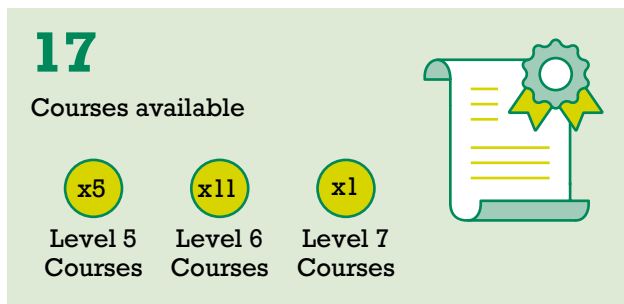
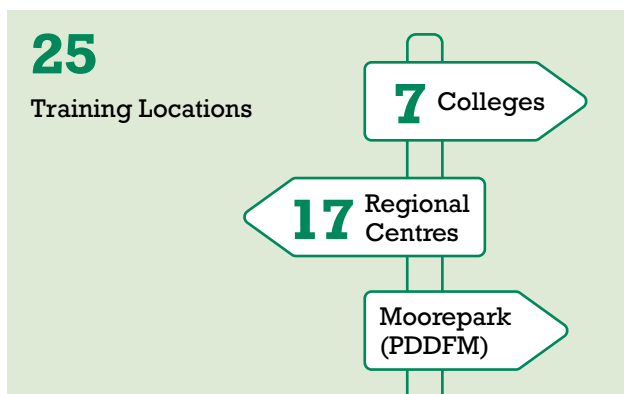
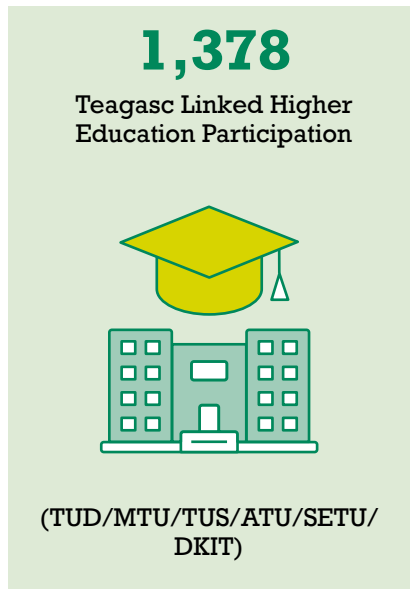
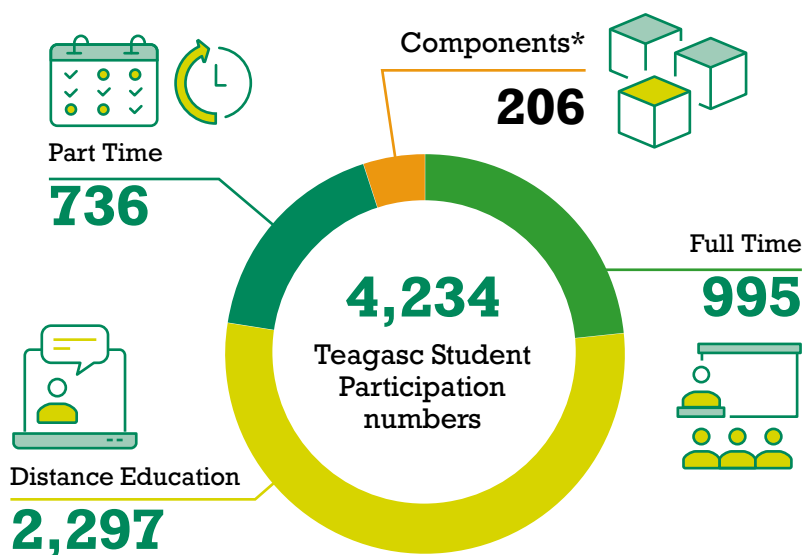
- Twelve peer reviewed scientific papers on health and safety in agriculture with Teagasc co-authors were accepted for publication during 2022.
- The EU COST Action - Safety Culture and Risk Management in Agriculture (SACURIMA) concluded in 2022. The Action produced an end of project report co-authored by vice chairperson John McNamara, Teagasc Health and Safety Specialist. In the final evaluation, the Action received a 100% rating.
- Teagasc Agricultural College students were urged to become Farm 'Champions for Safety' at seminars organised in advance of the start of student on-farm work practice in February 2022. The seminars were addressed by an accident victim.

Thanks to funding from the Department of Agriculture Food and Marine in 2022 a total of 18 machinery simulators have been installed across the country with machines in each of the college locations. These simulators allow students (pictured below) to practice on a wide range of machines, including tractors, telescopic loader, combine harvester and 360 excavator. The technology enables student to practise challenging tasks in a safe, virtual, environment.



Enhancing human capital (Education)

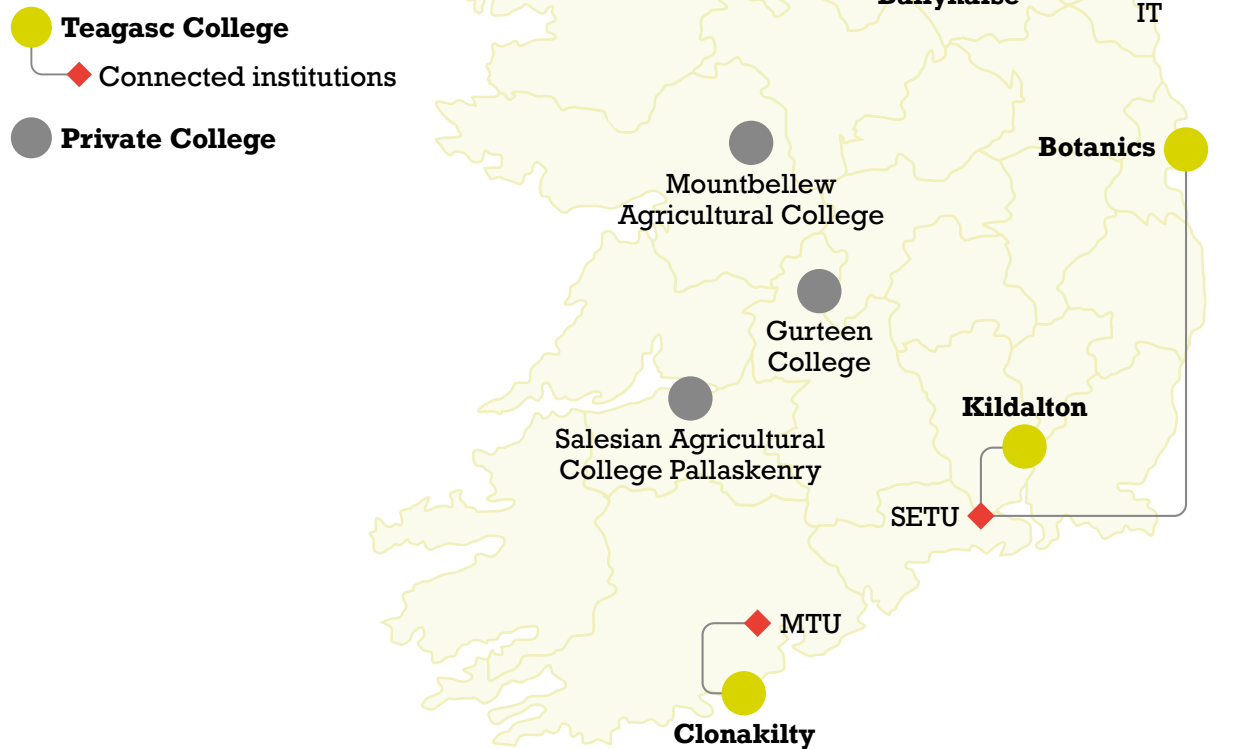
Teagasc Education Delivery



*Components refers to students who take a module within a course.

Paul McGlone, equine lecturer at Teagasc Kildalton, with Evi Bartlelink, who is pursuing the QQI Advanced Certificate in Equitation Level 6.

Teagasc and Private Colleges



Knowledge Transfer Master's Programme

The KT Walsh Scholars MAIS programme was introduced in 2010 followed by the MAEI programme in 2015. Both are delivered by Teagasc in collaboration with University College Dublin. There have been 193 participants since 2010, 8 students commenced an MAIS and 10 an MAEI in 2022.

MSc Agricultural Innovation Support (MAIS)

A research master's programme. Students research critical issues assigned by Teagasc on the role of knowledge transfer in supporting farmer decision making and technology adoption. During the 20-month programme students spend the first trimester in UCD followed by a 14-month placement at a Teagasc advisory office or college. 8

MSc Agricultural Extension and Innovation (MAEI)

This is a taught masters programme involving full time mentored placement in a Teagasc advisory office while completing modules using reflective and blended learning. The students are placed in two different Teagasc advisory regions during the 24-month period. 10



Student of the Year

Pictured L to R: Liam Herlihy, Chairman of Teagasc; Charlie McConalogue TD, Minister for Agriculture, Food and the Marine; Ellen Vaughan, Winner of the Teagasc/FBD Student of the Year Awards 2022 and Michael Berkery, Chairman of FBD Trust.

Ellen Vaughan is the Teagasc/FBD Student of the Year for 2022. Ellen hails from a dairy farm in County Meath and works part-time on the farm along with being a fulltime teacher. Ellen completed the Level 6 Distance Green Cert at Teagasc, Navan, County Meath.

Supporting Rural Development

Teagasc researcher Maurice Deasy, is working on an SEAI-GNI (Sustainable Energy Authority of Ireland/Gas Networks Ireland)-funded project, examining costs for farmers associated with supplying alternative feedstocks suitable for Aerobic Digestion (AD) plants. Using Teagasc National Farm Survey data, he is examining economic, environmental, and transport models of alternative scenarios for farm scale feedstock supply to regional AD facilities.

Farm business management

Transferring the Family Farm Events 2022

Circa 1,300 farm families attended clinic events with Teagasc advisors and education staff as well as accountants, solicitors, mediation services and health agencies at six locations nationwide.

Tax incentive certification

The Farm Management Department supervised and supported the following measures on behalf of Revenue and the Department of Finance

- Certification of business plans for tax reliefs including, Young Trained Farmer relief from Stamp Duty, Succession Farm Partnership Tax Credit and Enhanced Stock Relief for Young Trained farmers. A total of 746 business plans were certified by Teagasc staff during 2022. These plans detailed young farmers intentions

for their farm businesses: e.g. acquiring land, entering into a partnership to succeed as the owner of a farm or were increasing stock numbers.

- Certification of land transactions for Capital Gains Tax Restructuring Relief and Stamp Duty Consolidation relief. A total of 92 sets of restructuring transactions were certified by Teagasc Certification Staff covering over 2,100 hectares of land transactions.



The overall winner of the 2022 Teagasc forest photo competition was "Celebrating our shared national vision for trees, woods and forests" by Ciaran Willmore from Dublin with his image "The Hidden Waterfall". Pictured with the winning image is Minister of State for Land Use and Biodiversity, Senator Pippa Hackett and Teagasc Forestry Liaison Officer, Paul Butler.

Pigs, Forestry, Organic Farming

Teagasc runs substantial research and advice/extension programmes to support the pig enterprise and the forestry sector. In a sign of enhanced commitment to organic farming in 2022 Teagasc appointed six additional organic farming advisors and an additional organic farming specialist.

	Organic Farming	Pigs	Forestry
Conferences	National Organic Farming	Annual Pig Farmers Conference	Pine weevil conference; Talking timber
Open days	National Organic Beef		Grange; Athenry; Johnstown Castle; Kildalton College.
Farm walks (series themes)	Organic farm demonstration farms	Pig Discussion Groups: seven regional groups, over 80,000 sows.	Afforestation; forest recreation.
Other events	<p>A Teagasc seminar 'Growing Organics' formed part of the RDS Climate Smart Agriculture Series.</p> <p>Organic Farming Principles courses, for new entrants to the DAFM Organic Farming Scheme.</p> <p>National Ploughing Championships.</p> <p>National spring; autumn organic management webinars.</p>	<p>National Ploughing Championships.</p> <p>Education: Level 5 Specific Purpose Pig Course completed, 20 graduates.</p> <p>Pigs Newsletter: monthly, circulated to over 700 subscribers</p> <p>Teagasc Profit Monitor: 62,000 sows or 43% of the national herd on the system</p>	<p>Bloom; Energy in Agriculture, Forestry; Woodland Festival.</p> <p>Tullamore show; NPC.</p>



Equine

The Young Breeder Training Programme (a joint programme between Teagasc and Horse Sport Ireland), delivered World Championship success in Ermelo Holland in 2022 (team pictured above). Successes included world champion studbook; junior team world champions; senior team bronze; junior individuals silver and bronze.

Participants in this programme are 15-25 and undertake training, are selected via national championships and subsequently undergo a series of selection/training days. Subsequently, teams are chosen and provided with further training before participation at the World Championships.

The Teagasc 'Let's Talk Equine' webinar series addressed digital marketing, trading, husbandry/ health and reproductive management, and interviews with breeders and producers discussing their own stock and decision making.

Blended learning short courses, combining online and on-farm delivery, supported 54 attendees with topics including health and reproduction. E-newsletters, website, and press media content shared timely topics and advice to the equine industry.

Business strategy course

Teagasc delivers this QQI Level 8 UCD accredited course in collaboration with the UCD Mochael Smurfit Business School. The 9th cohort (the course is run annually) of 15 farmer students pictured started module one in November 2022.

Farmer participants in 2022 came from counties Clare, Tipperary, Meath, Cork, Donegal and Roscommon.

Energy and Biosecurity

"Considerations for the Poultry Industry"

This event was organised by Teagasc and run in conjunction with IFA, Animal Health Ireland (AHI) and the Department of Agriculture, Food and the Marine (DAFM).

Significant Development Projects

During 2022, Teagasc continued to lead substantial dairy focused development projects in east African countries – Kenya, Tanzania and Eritrea. The projects are primarily focussed on collaborating with local institutes to support the development of forage based dairy production systems and the dairy value chain.

There were a number of visits to Ireland by scientists and officials from each country. Teagasc also hosted visiting scientists from the individual projects. Further details on each project and a full list of project partners is available at www.teagasc.ie.

Supporting International Agricultural Relations and Development



Visits

During 2022 a number of high level international delegations visited Teagasc facilities and events. In May, the Director-General of the Food and Agriculture Organization, United Nations, Italy, Dr Qu Dongyu visited Teagasc Ashtown where he viewed the facilities, and met with staff from Teagasc and the Department of Agriculture, Food and the Marine.



There were also visits by Ministers, envoys and ambassadors from a range of countries including New Zealand, Colombia, Chile, Kenya and Albania.



Dairy Projects:

East Africa



**Climate
Smart
Dairy**
ERITREA

Eritrea

Climate Smart Agriculture Research and Innovation Support for Dairy Value Chains in Eritrea.

Teagasc-led project with budget of €4,250,000 (EU contribution €4,000,000), formally commenced on 3 February 2020 and will run for 52 months.



Kenya

Dairy Kenya Ireland

Climate Smart Research and Innovation Support for Livestock Development in Kenya.

(39 month project commenced in Oct 2019). Funding €1.3m (Irish government.) Teagasc led.

Tanzania

Maziwa Faida

Greening the Dairy Value Chain in Tanzania: Institutional Relationships and Innovations for Sustainable Milk Production 2021 to 2025

(five year project, €3m funding from Irish embassy.)

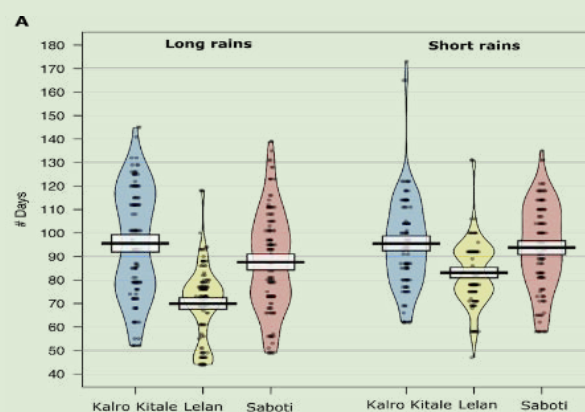
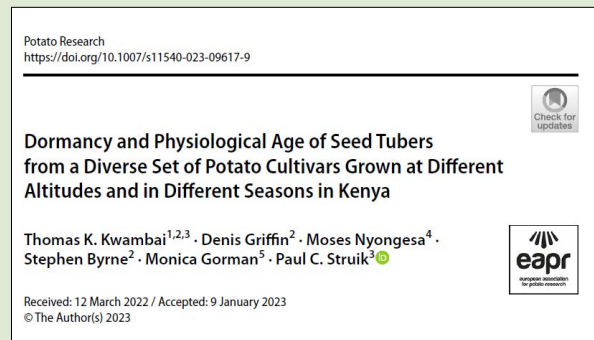
Potato Projects:

Kenya and Eritrea

Teagasc was involved in a number of Potato Projects in Kenya and Eritrea in 2022.

The CRRIsP (Climate Resilient and Responsible Innovations in Potato) project continued as a collaboration of "research for development" and included partners from Kenya, South Africa, the Netherlands, Germany and Ireland. The project addresses agronomy, post-harvest technology, plant breeding and genomics, and social sciences.

A Teagasc-funded Walsh Scholar has completed a study on the effect of variety and seed production location on dormancy. This is important in a production system that can grow more than one crop each year. The following pictures and graphic shows a snapshot of the field work (showing the negative effect of dormancy), the laboratory work (testing different varieties) and a key graphic from a recent publication.



Soils and Fertiliser Project:

Ethiopia

During 2022 research was conducted by a cluster of Teagasc Walsh Scholars in collaboration with GIZ (the German Aid Agency) and Wageningen University as part of the AFER+ project. The project is developing a prototype Fertiliser Decision Support Tool targeted at smallholder farmers.

Ethiopia - Enhancing the economic opportunities of farmers

Teagasc is supporting two PhD's in partnership with Irish Aid and University College Cork. One is a socio-economic study on how to increase value to food production, the second is developing a farm level economic model to assess how local agricultural production can be optimised.

Collaborations



Teagasc is a partner in Sustainable Food Systems Ireland (SFSI) and a member of IFIAD. Teagasc works closely with the Department of Foreign Affairs / Irish Aid and a number of embassies in Dublin and around the world. In 2022 Teagasc co-operated with the development of projects in Zambia, VietNam and Colombia and hosted delegations from outside the EU including Ethiopia and Uzbekistan.

Teagasc National Farm Survey

Each year the Teagasc National Farm Survey (NFS) collects detailed data from a representative sample of Irish farms. The preliminary Teagasc NFS farm income results for 2022 were published on June 12th 2023.

Weather conditions in 2022 were less favourable than normal for Irish agriculture's grassland systems, but were excellent for Irish tillage systems, particularly around harvest time.

In 2022 Irish farmers had to deal with very substantial cost pressures, with major inflation in key inputs taking place, largely on foot of Russia's illegal invasion of Ukraine and also associated with supply side problems following COVID-19. There were substantial increases in the price of fertiliser, concentrate feed, energy, contracting charges and overhead costs. Many farms saw their cost of production increase in 2022 by about one-third compared to the 2021 level.

However, farm output prices also increased in 2022. The largest increases occurred for milk and cereal crops, which rose in 2022 by close to 50% and 40% respectively compared to 2021. Price increases for weanlings, finished cattle and lamb were more modest.

In combination, these output price increases and the rise in production costs produced a mixed outcome for incomes across the various farm systems. The large increase in milk and cereal prices was more than sufficient to address the increase in production costs on dairy and tillage farms, but cost pressures resulted in a fall in incomes on many other farms.

The average family farm income for the Dairy system in 2022 increased by 53%, to just under €151,000. This increase in income can be entirely attributed to the rise in milk prices, as there was almost no change in milk output volume in 2022 compared with 2021. Fertiliser use fell slightly on dairy farms due to high fertiliser prices. A dry summer also limited grass availability and, even though feed use increased, milk yields fell slightly. However, this yield reduction was offset by a small increase in herd size in 2022. The dairy system is now very labour intensive, with almost 1.5 family labour units required on the average farm, as well as hired labour also. This should be taken into consideration in the context of the high income being generated in this system.

The average family farm income on Tillage farms also increased by 32% to just under €77,000 in 2022. Both the illegal invasion of Ukraine and unfavourable weather conditions in key production regions, limited grain availability internationally and pushed up global grain prices. However, favourable grain production conditions in Ireland actually boosted yields in 2022.

On Cattle Rearing farms there was a considerable effort to limit the increase in costs, by reducing the volume of fertiliser and concentrate feed use. This limited the increase in production costs on these farms to 13%, the lowest cost increase of any of the farm systems. However, a

10% increase in weanling prices was insufficient to cover this increase in production costs and the average family farm income in the Cattle Rearing system fell by 13% in 2022, to about €9,400.

Cattle Other farms (mainly finishers) fared a little better than Cattle Rearing farms. While their costs increased by almost one-third, the rise in finished cattle prices of 15% was sufficient to result in an increase in the average family farm income for the Cattle Other system of 9% in 2022, to about €18,800.

Among the grassland systems, Sheep farms had the most challenging year in 2022. Their costs increased by 24%, while there was only a 2% rise in lamb prices. This resulted in a reduction in the average family farm income in the Sheep system of 21%, to about €16,500.

Averaging across all of the farm systems, the average family farm income in 2022 was just over €45,800, an increase of over €11,000 on the 2021 level. However, this increase in average income was driven almost entirely by the large increase in Dairy and Tillage farm incomes in 2022. The increase in average income hides the fact that over half of cattle and sheep farms experienced an income reduction in 2022. However, many drystock farmers work off farm. Overall, 57% of farm households had an off farm income source in 2022.

The very high rate of general inflation in 2022, at about 8%, was another factor that farm households had to contend with. As with incomes elsewhere in the economy, this elevated rate of inflation has eroded the purchasing power of nominal farm incomes.

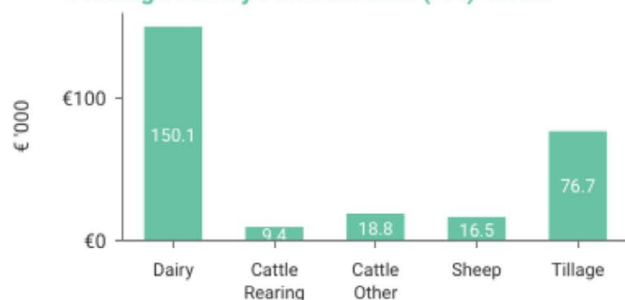
Prospects for farm income in 2023 remain mixed. While there are some signs emerging of an easing in cost pressures, these are only likely to be of real benefit in the 2024 production season and production costs for 2023 are likely to remain high. Sharply lower milk prices in 2023 will lead to a considerable fall in Dairy farm incomes. Lower cereal prices at harvest 2023 will also occur and production conditions in Ireland do not look like they will be on a par with 2022. Drystock farms will continue to rely on support payment to bolster incomes in the current tight margin environment faced in these systems. While general inflation should ease in 2023, it will still remain high in comparison with the annual rate of inflation over the last decade.

Table 1: Teagasc NFS Summary Results for Average Farm Incomes in 2020 and 2021

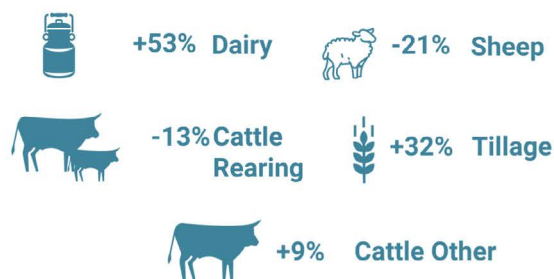
	2020 €	2021 €	2021 vs 2020 €	difference €
Dairy	79,002	97,350	23.2%	18,348
Cattle Rearing	8,427	10,927	29.7%	2,500
Cattle Other	15,525	16,416	5.7%	891
Sheep	17,880	20,451	14.4%	2,571
Tillage	33,339	58,995	77.0%	25,656
Mixed Livestock	34,368	65,909	91.8%	31,541
Average	27,245	34,367	26.1%	7,122

Teagasc National Farm Survey 2022

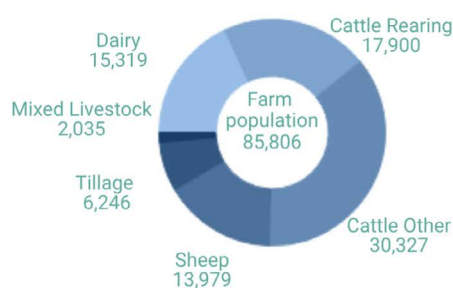
Average Family Farm Income (FFI) 2022



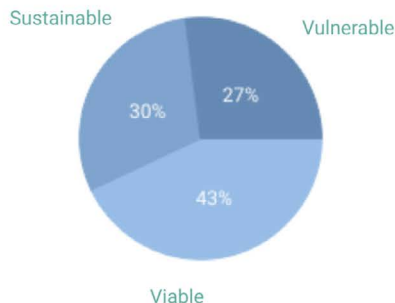
% Change in FFI 2022 vs 2021



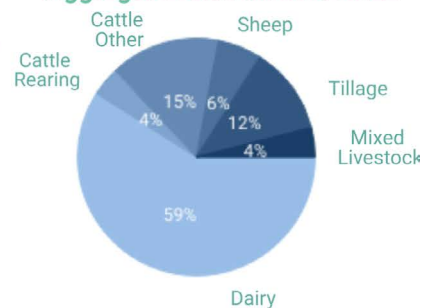
NFS Farm Population 2022



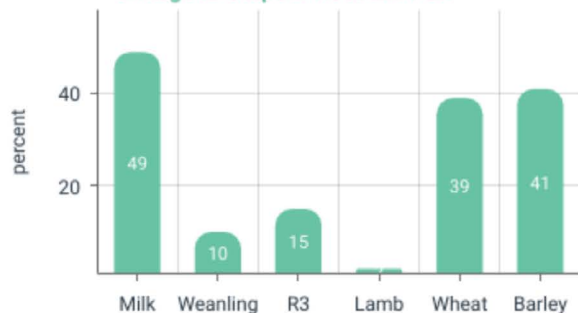
Farm Viability 2022



Aggregate Farm Income 2022



Change in Output Prices '22 v '21



Change in Input Prices '22 v '21



Direct Costs as a % of Output 2021 & 2022



Overheads Costs as a % of Output 2021 & 2022



The Teagasc National Farm Survey (NFS) has been in operation since 1972 as part of the EU FADN (Farm Accountancy Data Network). The 2022 preliminary results are based on a sample of 700 farms, representing over 85,000 farms nationally.

www.teagasc.ie/rural-economy/rural-economy/national-farm-survey/

The background of the top half of the slide is a photograph of a potato processing facility. In the foreground, there are large wooden crates filled with freshly washed, light-colored potatoes. A person's hand is visible, reaching into one of the crates. In the background, there are industrial structures, including metal walkways and machinery. Overlaid on this image is a large, white, stylized circular arrow graphic that points upwards, symbolizing a cycle or progress. The graphic is composed of several concentric arcs and a central arrow shape.

Strategic Goal 2

To enhance the production and processing of safe, nutritious and flavoursome foods in line with sustainable circular bioeconomy principles.

- Processing Safe, Nutritious and Flavoursome Foods
- Providing Scientific Leadership in the Development of an Agri-food Sustainable Circular Bioeconomy (SCB)



Pictured receiving an Industry Engagement Award, at the Knowledge Transfer Ireland (KTI) impact awards were (L to R); Marianne Nolan (Kerry Agribusiness), Martina Cullivan (Independent Milk Laboratories), Mohammad Hossain (Teagasc), Robert Burns (Independent Milk Laboratories), Siobhan Jordan (Teagasc), Sharon Sheahan (Teagasc), Conor Butler (FBA Laboratories), Martin Danaher (Teagasc), Clément Douillet (Teagasc), Mary Moloney (Teagasc) and Miriam Walsh (Teagasc).

Case study: Chlorine-free cleaning

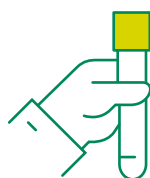
Chlorates are a safety concern in food products, particularly those consumed by vulnerable groups. Chlorate residues are a by-product of chlorine-based cleaning detergents. Prior to January 2022 these were widely used on farms and in dairy processing for cleaning milk contact surfaces (milking machine and bulk tank). Since then farmers must use chlorine-free products in their daily wash routines.

In 2022 researchers at Teagasc Moorepark developed five new chlorine-free cleaning protocols for on-farm cleaning. These protocols were evaluated on Teagasc research farms and then on commercial dairy farms, including the validation of microbiological standards.

Researchers also investigated chlorate-reduction in dairy processing facilities. They showed that Nanofiltration and Reverse Osmosis (RO) techniques could reduce chlorate levels in skim milk powder production.

Teagasc milk quality advisors communicated the new cleaning protocols to farmers through a web page and a series of webinars. Awareness of chlorine-free washing has been raised through dairy advisor in-service training and education courses with dairy husbandry modules.

Teagasc Ashtown researchers developed a rapid, sensitive, chlorates test for milk and dairy ingredients in response to requests from the dairy industry. Licensing of proprietary testing methodologies from Teagasc by Independent Milk Laboratories (IML), FBA Laboratories (FBA) and Kerry Group, led to the establishment of new test laboratories in Ireland.



To date, FBA and IML have tested a total of **80,000 samples**

The increased availability of testing facilities has enabled quick responses by local dairy processors and their milk suppliers to chlorate residue concerns. This allows chlorate contaminated milk to be identified before it is moved for further processing.

To date, FBA and IML have tested a total of 80,000 samples; Kerry Group has capacity to test 200 milk samples daily. In November 2022, Teagasc and the three industry partners secured Knowledge Transfer Ireland's Industry Engagement Award.

Meat Technology Ireland published: "Impact of industrial practices on the microbial and quality attributes of fresh vacuum packed lamb joints" in the journal Foods and data within the paper has been used to form the basis of a shelf life prediction model for the meat industry.

The International Dairy Federation announced the winners of the inaugural "IDF Professor Pavel Jelen Early Career Scientist Prize", created to acknowledge the work of scientists and/or technologists in the dairy science and technology field and aimed toward "early-career" scientists. Equal Second Place was won by Teagasc researcher Prabin Lamichhane (Structure-function relationships: new insights into controlling split and crack defects in cheese)

Catalysing Connections

is a pilot pre-accelerator programme designed to foster novel idea generation, innovation and entrepreneurship in early career researchers from across the VistaMilk Science Foundation Ireland (SFI) Research Centre hosted by Teagasc.

Multidisciplinary teams of postgraduate students and postdoctoral researchers combined to bring the VistaMilk approach of "Measure-Predict-Act" to grand challenges facing the Agri-Food sector. Mentorship and support of the teams has been provided by Technology Transfer Offices from the VistaMilk participating Universities and Research institutions, including Teagasc, University College Dublin, Walton Institute South East Technological University, Tyndall National Institute, University of Galway and Dublin City University.



Meat and livestock contribute to personal health and well-being, maintain ecological balances and secure socioeconomic livelihoods. The International Summit on The Societal Role of Meat – What the SCIENCE Says, highlighted and summarised all the different ways in which meat is relevant in modern society. The Summit was hosted by Teagasc in October 2022.

As a pivotal source of nourishment, and playing a large role in ecological and economic systems, meat production must continuously evolve with the best technologies available in order to maximize its benefits and minimize undesirable impacts.

The Summit brought together a group of globally leading scientists from across relevant disciplines to present and achieve a comprehensive synopsis of the scientific insights on the role of meat in society.

Providing Scientific Leadership in the Development of an Agri-food Sustainable Circular Bioeconomy (SCB)



"Research & Innovation for Sustainable Food Systems: Delivering on the Ambition of Food Vision 2030" was an event co-hosted by Teagasc/DAFM which positioned both organisations as leaders in food systems thinking. This event was highlighted by the Chair of the High-Level EU Committee in Food Systems Science as an example of good practice at an EU Standing Committee on Agricultural Research (SCAR) group meeting.



Teagasc and MTU launched a series of online interactive workshops known as The Irish Agropreneur Series. This series, established within the EU funded project AgroBRIDGES, aims to support the development of short food supply chains (SFSC) across Europe. It seeks to build bridges between producers and consumers and rebalance farmers' market position by empowering them with knowledge about new business and marketing models that are based on SFSCs.

October 2022 marked 10 years of the Food Works programme, an accelerator programme for high potential, innovative Irish food and drink start-ups, supported by Bord Bia, Enterprise Ireland and Teagasc.



Pictured at the event were: Professor Frank O'Mara, Director of Teagasc; Michael Murphy, Interim CEO, Bord Bia; Damian English T.D., Minister of State for Business, Employment and Retail; Mark Christal, Divisional Manager, Food & Sustainability with Enterprise Ireland.



A new collaborative project aimed at developing a low carbon roadmap for Ireland's bioeconomy, will be led by Munster Technological University (MTU) with Teagasc, NUI Galway and the Central Statistics Office of Ireland. INFORMBIO, funded through the Department of Agriculture, Food and the Marine's Competitive Research Call, will develop a first Foresight Analysis for Ireland's bioeconomy, aimed at understanding the available bioresources and value chains which can best contribute to Ireland's 2050 climate neutrality target.



Teagasc, in collaboration with Munster Technological University (MTU), hosted an online Research and Innovation Workshop 'NUÁIL!' for food producers, members of the research community, policy makers and other stakeholders in the Irish agri-food sector in June.

In September the Minister for Further and Higher Education, Research, Innovation, and Science Simon Harris announced the winner of the Food Challenge as part of the SFI Future Innovator Prize programme and awarded €2m in funding to the Leaf No Waste team.

The Leaf No Waste team is developing novel solutions that have the potential to address food waste by combining plant fortification with sustainable compostable packaging to enhance the shelf life of fresh produce.

The Leaf No Waste team is led by Lorraine Foley of TU Dublin along with core team members Prof. Jesus Frias Celayeta of TU Dublin and Lael Walsh and Shivani Pathania of Teagasc. The Societal Impact Champion on the team is Stephen McCormack of McCormack Family Farms.



€2 million in funding



Strategic Goal 3

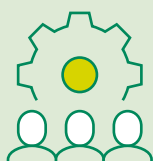
To provide science-based evidence and technologies to enable Ireland meet commitments in regard to gaseous emissions, water quality and diversity.

- Mitigating Gaseous Emissions
- Pipeline Research
- SignPost Farms Programme
- Adaptation to Climate Change
- Improving Water Quality
- A more biodiverse agriculture

Teagasc Research Directorate 2022

Permanent
researchers

154



Contract
researchers

126



New publicly-funded
research projects
secured in 2022

74



Horizon
2020 and
Horizon
Europe
projects
ongoing in
2022

75



Horizon Europe
funding -
6th in
Europe for
total number
of projects
secured in
agri-food &
bioeconomy
theme



Horizon
Europe
funding -
7th in
Europe for
total funding
secured in
agri-food &
bioeconomy
theme



Peer reviewed A1
publications

663



Collaboration
agreements with
industry

20



Walsh
Scholars

204



Licence/option/
assignment
agreements signed
with industry

14



Income from
licence/option/
assignment
agreements

€833,000



Value of new publicly-
funded research
contracts signed

€29 million



Invention
disclosures

23



Co-authored publications with
international collaborators

327



Average field
weighted citation
impact

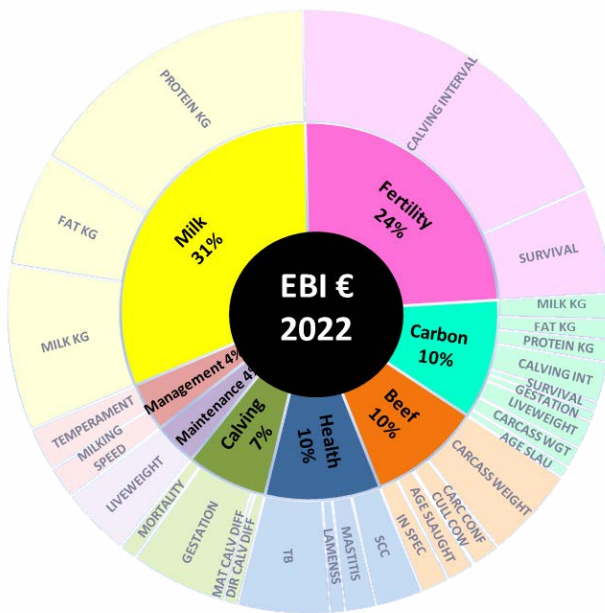
1.41



Active patent
families

36





In association with ICBF, the Economic Breeding Index was revised to include a carbon sub-index and the beef sub-index was modified to include age of slaughter. These modifications will increase the economic weight of traits that reduce greenhouse gas emissions (Calving Interval, Days to Slaughter) and reduce the economic weight of traits that increase emissions (Milk, Fat & Protein).



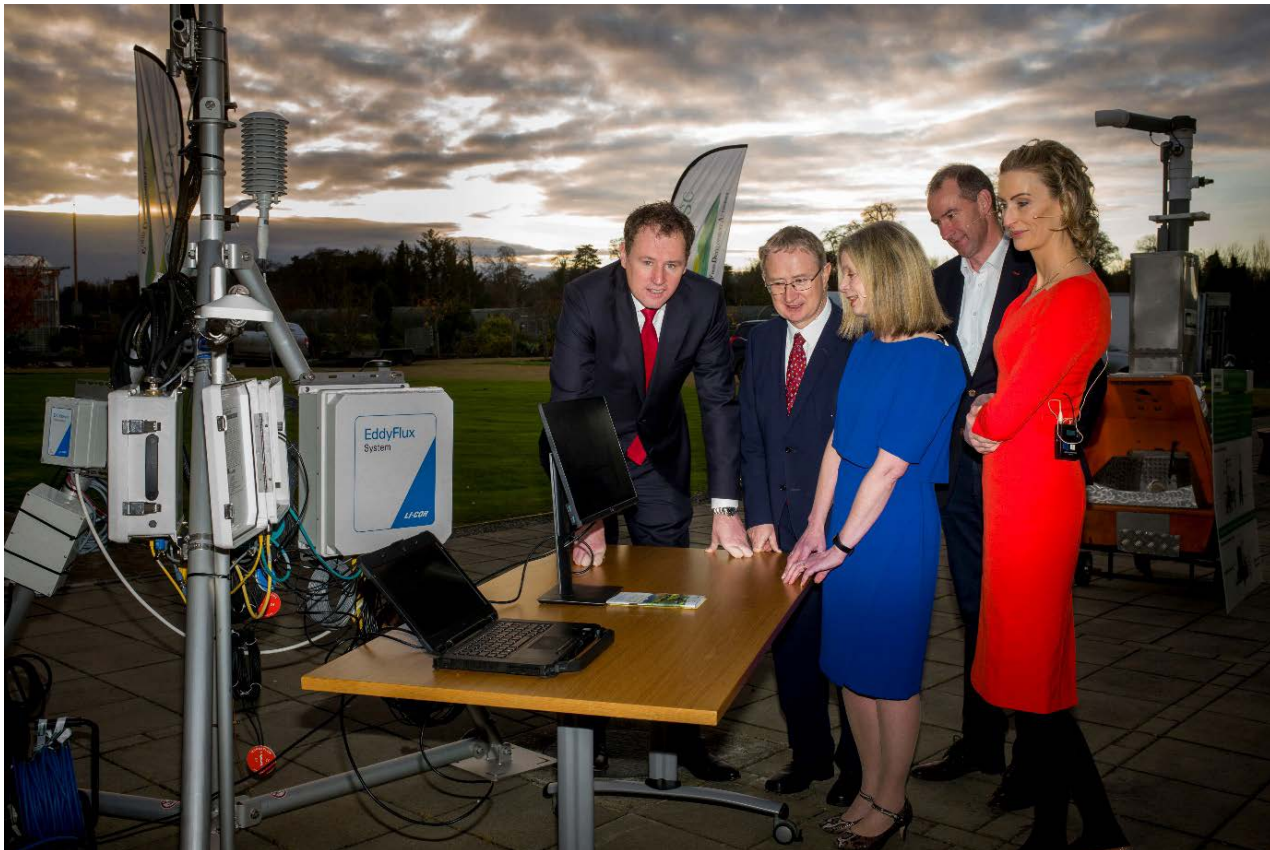
Eddy Covariance is a micrometeorological technique used to directly measure the rate of CO₂ exchange between the atmosphere and terrestrial ecosystems. In 2022, The National Agricultural Soil Carbon Observatory (NASCO) which was funded by the Department of Agriculture, Food and the Marine (DAFM). In 2022 a total of 32 Eddy Covariance Flux Towers were located on benchmark sites including agricultural grasslands, mineral soils and peatlands. The data generated will provide accurate, long-term information on the carbon dynamics of Irish agricultural systems. This will also complement the greenhouse gas research carried out as part of Teagasc Sign Post farms, Vista Milk, Terrain AI and the Agricultural Catchments Programme.

Pipeline Research

Awards of over €3.6M for Irish researchers in four climate and agriculture research projects arising from the 2022 Ireland – New Zealand Joint Research Call were announced by Minister for Agriculture, Food and the Marine, Charlie McConalogue TD, and Minister of State with special responsibility for research and innovation, Martin Heydon TD. Pictured at the announcement were Donagh Berry, Teagasc and Director of Vista Milk; Minister Martin Heydon TD, Dominika Krol, (Agricultural) Gaseous Emissions Researcher, Teagasc Johnstown Castle, Brad Burgess, New Zealand Ambassador to Ireland, Catherine Stanton, Teagasc Food Research programme and APC, and Paul Smith, Teagasc Researcher, Animal and Grassland, Research and Innovation Centre, Grange.



The Teagasc Climate Action Strategy 2022-2030 'Supporting Farmers for Climate Action'



Minister for Agriculture, Food and the Marine, Charlie McConalogue, TD; Professor Frank O'Mara, Director of Teagasc; Siobhan Jordan, Teagasc; Sean Coughlan, CEO, ICBF and Deirdre Ryan, Director of Origin Green, Bord Bia at the Teagasc Climate Action Strategy 2022-2030

FEARGA Red Clover

won the 2022 Sustainable Agriculture Award at the Enterprise Ireland Innovation Arena hosted at the World Ploughing Championships. FEARGA is Ireland's first nationally bred Red Clover variety and was developed by the Teagasc Forage Breeding Programme based at Oak Park. Local breeding means better adaptation to local climate and farming practices.

The Energy and Farm Business Show

took place in Gurteen Agricultural College, County Tipperary. The show was organised by Teagasc, Tipperary County Council, IFA, Tipperary Energy agency, Technological University of Shannon and Gurteen Agricultural College. The show's main sponsor is the Department of Agriculture Food and Marine. Exhibitors offered a wide range of the latest product and service innovations relevant to agriculture.

Newford Suckler Demonstration Farm

is producing calves that gain weight rapidly and can be slaughtered at lower ages to produce high quality beef. Producing these results is allowing the Teagasc Athenry-based project to achieve a carbon footprint which is 14% lower than the national average for similar enterprises.

Signpost Farms Programme



In 2022 Signpost demonstration farmers received individual farm sustainability reports for their farms through the National Farm Survey. The first time ever that individual farm reports have been issued through NFS, providing farmers with key measures of economic, social and environmental sustainability metrics for their farms.

These reports will allow farmers to track their progress throughout the duration of the programme as well as benchmark themselves against other farmers and key targets for the Signpost Programme. Knowing the total carbon emissions is an important starting point for any farmer on the journey to improving environmental sustainability.

Shane and John Fitzgerald, who farm near Portlaw in county Waterford, hosted a visit by His Royal Highness The Prince of Wales in March 2022. The actions being taken on the Fitzgerald family farm to reduce Greenhouse gas emissions, protect water quality in the streams and rivers and improve the biodiversity on the farm were highlighted.



His Royal Highness The Prince of Wales; Simon Coveney TD, Minister of Foreign Affairs and Minister for Defence; and Shane Fitzgerald, host farmer pictured during a soil test pit demonstration with Cathal Somers, Agricultural Sustainability Support & Advisory Programme Advisor.



The EU Commissioner Mairead McGuinness, visited the farm of Alan Clarke from Kilinkere, County Cavan, a participant in the Teagasc Signpost programme - Farmers for Climate Action. Pictured during the visit were (l to r): Tom O Dwyer, Head of the Signpost Programme; Mairead McGuinness, EU Commissioner; Michael Hanley, CEO of Lakeland Dairies; Professor Frank O Mara, Director of Teagasc; Alan Clarke, Signpost farmer and Niamh Lynch Teagasc Advisor.

Drinks Ireland partners with Teagasc Signpost programme to support sustainable future supply of Irish grain.

Adaptation to Climate Change

Improving Water Quality

Agricultural Sustainability Support and Advisory Programme (ASSAP) advisors provide advice to farmers in Priority Areas for Action (PAAs). They visited 1,346 new farms in 2022 and re-visited 429 farms to evaluate the level of implementation of recommended mitigation measures. While the recent EPA Water Quality Report shows a further slight decline in water quality, the level of improvement in PAAs was greater than for non PAA areas.

Teagasc's Agricultural Catchments Programme (ACP)

The ACP programme has continued to inform national and EU policy makers and agricultural stakeholder through its peer reviewed research undertaken with the collaboration of 300 farmers across its six catchments.

In addition to twelve scientific papers published in 2022, the ACP contributes to farmer and advisor training, third level college courses, public events & open days etc. The ACP is funded by the Department of Agriculture, Food and the Marine.

12



scientific papers published in 2022

'Working together for Water Quality' was the theme for the 2022 Teagasc Agricultural Catchments Week. Research, collaborative initiatives and measures being implemented on farms to improve Ireland's water quality were showcased. Since 2008, the Agricultural Catchments Programme has been working with over 300 landowners in six catchments, monitoring water quality and assessing the impact of changes in Ireland's Nitrates Action Programme and Nitrates Derogation. The programme is funded by the Department of Agriculture, Food and the Marine.

A more biodiverse agriculture

Teagasc researchers developed a standardised field margin quality botanical diversity, composition and quality assessment for intensively managed farming systems technique which tracks changes in habitat quality in response to conservation actions. This new tool can be used to target on farm actions to improve biodiversity and can also be used as a biodiversity indicator for farmland biodiversity.

Efforts are underway to design a biodiversity indicator for both habitat quantity and quality that can be incorporated in the Teagasc National Farm Survey.



quantity



quality



The Teagasc Biodiversity Working Group responded to a request for submissions from the Citizens' Assembly on Biodiversity Loss. The Teagasc submission described:

- A.** The current state of farmland biodiversity in Ireland
- B.** The main drivers of biodiversity loss, their impacts and the opportunities of addressing these drivers
- C.** Opportunities to improve the State's response to the challenge of biodiversity loss, how that response can best be resourced and implemented in a strategic and coordinated manner, and how progress can be measured.



Strategic Goal 4

To ensure through science-based innovation, healthier soils, animals and people

- Healthy and well-cared for animals
- Healthy Soils
- Human Health and Nutrition



A Teagasc Moorepark study funded by VistaMilk investigated welfare changes in calves during transportation from Ireland to the Netherlands via ferry. Blood glucose levels were monitored as indicators of dehydration, energy balance, immunological status and stress.



Researchers at Teagasc, Grange, have applied next generation sequencing (NGS) for studies on respiratory pathogens and mechanisms underlying the pathogenesis of respiratory disease in cattle. Precise, targeted diagnosis of bovine respiratory disease agents may lead to the development of novel vaccines, potentially reducing antibiotic use.

A Teagasc Grange animal welfare assessment on Irish farms, using an animal welfare index, demonstrated the very good welfare standard of Irish beef production systems. The study provided scientific evidence on:

- (1) physical health and well-being
- (2) naturalness, meaning that animals can express normal behaviour, and
- (3) subjective states, in that animals experience positive states and that negative states (e.g. pain) are minimized.

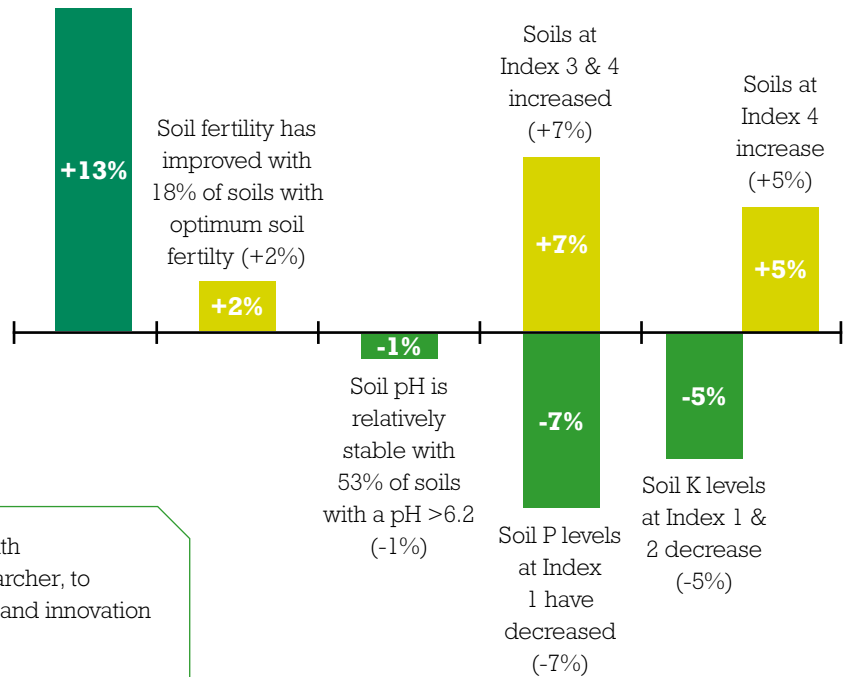


Pictured at the Teagasc Animal & Grassland Research & Innovation Centre, Moorepark, Fermoy, Co Cork at the launch of a Teagasc booklet on 'Reducing lameness in Irish dairy herds' are Prof. Pat Dillon, Teagasc Director of Research, Natasha Browne, Teagasc, Ger Cusack, Comeragh Veterinary, KilmacThomas, Co Waterford, Muireann Conneely, Teagasc Research Officer, Ned Dunphy, Farm Relief Services & Irish Cattle Foot Trimmers Association (ICFTA) & George Ramsbottom, Teagasc Dairy Specialist. Photo O'Gorman Photography.

Healthy soils

National Highlights (All Soil Samples)

All farm enterprises took more soil samples in 2022 (+13%)



In 2022 Teagasc appointed a Soil Health Technologist, and a Soil Carbon Researcher, to continue to build capacity in research and innovation in soil health.

Teagasc researchers are participants within the European Joint Programme on agricultural soil management (EJP Soil), addressing societal challenges including climate change and future food supply.

Training of advisory and industry stakeholders on visual soil health assessment methods continued in 2022 with events held at Johnstown Castle through the ASSAP and Signpost Programme.

Teagasc, in collaboration with the ICOS Skillnet and the fertiliser industry, developed a 20 hour blended training course in Sustainable Fertiliser for professionals involved in the sale, purchasing and advice relating to fertilisers. The course covers sustainable fertiliser use, soils nutrition, Irish and EU legislation, farm nutrient planning and practical fertiliser use on the farm.

A major Teagasc open day took place in August at the Teagasc Soil, Environment and Land use Research centre in Johnstown Castle, County Wexford. It displayed technologies that farmers can adopt to improve the economic, social and environmental sustainability of their farming enterprises.



Research from the Teagasc environment research centre, Johnstown Castle demonstrated that there was no impact of urease inhibitor N-(n-butyl) thiophosphoric triamide (NBPT), incorporated into protected urea fertiliser, on the structure and abundance of soil bacterial and fungal communities after five years of repeated application to an intensively managed grassland.

A scientific paper from Teagasc showed that getting soil phosphorus (P) levels right through a fertiliser programme can significantly reduce emissions of nitrous oxide (N_2O), a potent greenhouse gas. The paper from researchers at the Teagasc Environment, Soils and Land-Use Department in Johnstown Castle, County Wexford was published in the scientific journal, Nature Scientific.

Human health and nutrition



€9.7m

funding to support the expansion of plant protein production

The 'VALPRO Path' project is a Horizon Europe Innovation Action, which will deliver new added-value opportunities that support the expansion of plant protein production. The four-year €9.7 million project is being co-ordinated by Ewen Mullins at Teagasc Oak Park and will involve up to 25 leading academic and industry teams across 10 European countries.

The Teagasc Moorepark Food Biotest facility which conducts research to further our understanding of the fate of food within the human body was completed in 2022.

Teagasc hosted the 7th International Conference on Food Digestion, with over 250 delegates from 29 countries. Key topics were food structure, food processing, digestion models, food bio-accessibility and the gut microbiome. The conference was organised in the frame of the INFOGEST research network. This is the first time that this world-leading biannual conference has been held in Ireland. Over 160 scientific papers were presented, with six keynote speakers, including Teagasc's Professor Paul Cotter, and 23 oral presentations.

Macra through its mental health programme 'Make The Moove' delivered tailored training to students in Agricultural Colleges across the country. The training, run on a pilot basis, was funded by Mental Health Ireland and supported and facilitated by Teagasc.

Recognition



Catherine Stanton is a Senior Principal Research Officer in the Teagasc Food Biosciences department. Her research focuses on Nutritional aspects of dairy foods, functional foods, Probiotics and Infant gut microbiota. In 2022, she was named as the number one female scientist in Ireland. Catherine's work focuses on gut flora, food science, probiotics, Lactobacillus and microbiology. Catherine's current projects include:

- **MIMIC:** Examining missing microbes in infants born by C-section (Science Foundation Ireland, DuPont)
- **Hydrofish:** Combining targeted nutraceuticals and traceability technology for a smarter and sustainable Irish fish aquaculture industry (Enterprise Ireland)
- **APC4 Core Theme 2.3:** Examining microbiota composition at the Extremes of Life (Science Foundation Ireland)
- **SMARTProtein:** Future-proofing alternative terrestrial protein sources for human nutrition encouraging environment regeneration, processing feasibility and consumer acceptability. (EU Horizon 2020)

Diarmuid Sheehan, from the Teagasc Food Research programme, was the 2022 recipient of the International Dairy Foods Association Research Award in Dairy Foods Processing awarded by the American Dairy Science Association® (ADSA®).



























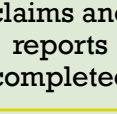




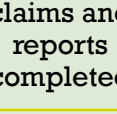


Strategic Goal 5

To constantly improve organizational excellence and efficiency in the delivery of our services

- Resourcing and Managing Current Expenditure
- 'Teagasc Together': Building a More Agile Organisation
- Diversity and Inclusion
- Data Protection
- Collaboration
- Infrastructure Investment
- Leveraging new technology for staff
- Digitalisation and ICT Resources
- Communications and Engagement

Teagasc Operations Directorate 2022

				
ICT	People	Corporate Responsibility & Sustainability	Health & Safety	Finance
 99% ICT Infrastructure availability	 500 recruitment competitions	 % Procurement Projects incorporating Green Public Procurement (GPP) = 41%	 3051 Bi-Monthly H&S Audits completed in 2022 across Teagasc	 Managed Teagasc budget of €225 million
 34 ICT Projects completed	 450 appointments	 1,297,400 kWh of LED Light energy savings	 3695 H&S Improvement actions completed in 2022 across Teagasc	 36,000 supplier invoices
 €911K invested in ICT projects	 3,900 applications	 383,600 kWh of additional Solar PV Energy production generated	 3695 H&S Improvement actions completed in 2022 across Teagasc	 321 research project grant claims and reports completed
 Supported 3,114 PCs	 National network of 36 Teagasc Data Protection Co-ordinators established	 383,600 kWh of additional Solar PV Energy production generated	 3695 H&S Improvement actions completed in 2022 across Teagasc	 Payroll delivered to 1,360 staff and 1,745 pensioners
 4,619 network devices under management	 National network of 36 Teagasc Data Protection Co-ordinators established	 383,600 kWh of additional Solar PV Energy production generated	 3695 H&S Improvement actions completed in 2022 across Teagasc	 Payroll delivered to 1,360 staff and 1,745 pensioners

Teagasc Research, Advisory and Education Programmes operate from 10 multi-building sites and 45 stand alone offices. Teagasc also uses farm land and offices under rental agreements.

Evaluation

The Evaluation Unit led the external review of the Rural Economy and Development Programme (REDP) using a panel of seven national and international peers. As part of the review, REDP produced six in depth case studies outlining how the programme is contributing to change in the agrifood sector. The case studies ranged from: Enhanced Monitoring and Evaluation of Irish Agricultural Performance; FAPRI-Ireland Models in Support of evidence-based policy making; Teagasc's Succession and Inheritance Knowledge Transfer Programme; Responsive and Inclusive Digital Transformations on Farms; Informing and assessing national policies on land use and soils and the Contribution of Teagasc RD to rural sustainability.

Two Teagasc Advisory Regions, Waterford-Kilkenny and Laois-Kildare-Meath-Louth-Dublin were also reviewed using an external review panel. Prior to the Advisory Regions' formal reviews, a survey of client satisfaction based on the Net-Promoter-Score methodology was carried out in both regions by the Evaluation Unit, bringing to seven the number of Advisory Regions whose client satisfaction has been assessed.

Diversity and inclusion

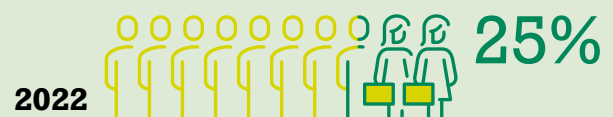
Teagasc declared 2022 as the Year of Diversity and Inclusion. A diversity and inclusion culture audit carried out in collaboration with Dublin City University through which staff gave anonymous feedback on diversity topics and participated in on-line training, watched videos and completed short surveys on diversity topics. The survey revealed the diversity in the Teagasc workforce.



Related actions:

- 60 Department managers completed a full training programme on diversity and inclusivity in 2022. Content covered included equality, equity, diversity and inclusion, unconscious bias, inclusive language, inclusion within teams, psychological trust.
- Teagasc also launched "*gender sensitive communication guidelines*" to ensure staff members use language that respects people of all genders within the agricultural sector.
- Celebrating pride, which had never been even acknowledged in Teagasc before. Three staff webinars were attended by over 400 staff. The pride flag was raised in all Teagasc centres and colleges.

Women in senior management positions in Teagasc



Nationalities working in Teagasc	40
LGBT+	5%
Neurodiverse	12%
Gender pay gap	12%

Data protection

Presentations were delivered to KT staff members in the client-facing arm of Teagasc to discuss risk mitigation in Data Protection terms, prior to schemes going live in Q1, 2022. A new role, Data Protection Coordinator, was established and staff members throughout Teagasc took on this function towards the end of 2022.

Data Subject requests were dealt with in line with the Teagasc policy. Data Breaches were dealt with, reported and recorded as outlined in the Teagasc policy. Updated Data Protection Training was made available to all Teagasc users on the internal T-Learn platform. Teagasc comes under the Freedom of Information Act 2014 and all requests were dealt with as required by the legislation.



Digitalisation and ICT resources

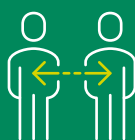
The Teagasc Digital Transformation Strategy encompasses three key goals:

A Digital Sustainability platform



This platform is one of the three key components of the Teagasc Climate Action Strategy launched in December 2022. Teagasc, ICBF and Bord Bia are collaborating in the development of the Digital Sustainability Platform. This digital platform will allow farmers and advisors to benchmark current emissions on an individual farm and make a plan to take action to reduce them. 'Know my Number - Make my Plan' is the tagline for this initiative. This tool will be developed over time to include carbon sequestered on the farm as well as emissions.

A Client Management platform



A Customer Relationship Management (CRM) tool will offer the advisor a full client profile which will in turn facilitate targeted client communications and campaign management driven climate technology adoption.

A Data Value platform



This platform will enable Teagasc to extract more value from existing data; curate data for re-use and open data use; modernise analysis tools; improved data skills; generate insights through visualisation and utilise big data techniques.

Reviews for each of the 12 Teagasc Advisory Regions were published in June 2022. The reviews give an overview of the range of the agricultural and farming sectors in each region. The supporting advisory activities and education courses provided by Teagasc are also highlighted in the regional reviews. These will be annual publications which will outline the development of farming in the different regions.

A webinar marking the landmark publication of 'Developing Rural Ireland: A History of the Irish Agricultural Advisory Services' by Mícheál Ó Fathartaigh took place on Thursday, 17 February 2022. It was hosted jointly by Teagasc and the Social Sciences Research Centre (SSRC) at NUI Galway and had as its central theme the transformation of rural Ireland in the twentieth century.

Communications and engagement

Science Week

Teagasc delivered a range of events as part of a 'Festival of Farming and Food' including:

- **60 Minute Science** - Food Sustainability at Teagasc Ashtown which addressed questions of food sustainability, safety and environmental effects.
- **Women in STEM** - How can your career help the planet? An online event for second level students and up, from Teagasc Head Office.
- **Kids' Corner** - Say Cheese invited primary level students to this fun interactive webinar broadcasting from Teagasc Moorepark
- **Trails and Tales forestry walks which showed the benefits of forestry** - from carbon sequestration to biodiversity and personal wellbeing.

Teagasc research centres at Athenry, Moorepark and Oak Park and the College of Amenity Horticulture hosted school groups or delivered other outreach initiatives for the public.

Teagasc award at BTYSTE

Johannah Pigott, a Transition Year student from Colaiste Treasa, Kanturk, Co. Cork, was the winner of the Teagasc award at the BT Young Scientist and Technology Exhibition 2022 (BTYSTE). Johannah's project looked at the potential of nematodes to replace chemical pesticides.

Certificate for European Consultants in Rural Areas CECRA

The modules 'Facilitation and Discussion Group Management' and 'Personal Development and my Advisory Profile' were delivered in 2022. A total of 18 advisors participated.

Irish Language Scheme 2022 - 2025

This scheme was launched in November 2022. Teagasc is guided by the principle that the provision of Irish language services should be based on:

- the level of demand for specific services in the Irish language,
- the importance of a proactive approach to the provision of such services, and
- the resources, including human and financial resources, and the capacity of the body concerned to develop or access the necessary language capability.

Teagasc provides content (some press releases, magazine editorials, web pages, leaflets/brochures etc.) in Irish. A number of Teagasc researchers and specialists are fluent speakers and undertake interviews in Irish. There is a dedicated email address for queries in Irish on the Teagasc public website, which is gaeilge@teagasc.ie

There are four Teagasc representatives on the Steering Committee of the Irish language Caomhnú Áránn EIP-AGRI project on the Aran Islands. The aim of the project is to manage the habitats of the Aran Islands and to maximise their agricultural and ecological output. It works with 127 farmers on the three islands.



University College Dublin (UCD) announced the launch of a new Level 9 Professional Diploma in Researcher Development designed and developed in association with Teagasc specifically for Post-Doctoral Fellows employed by Teagasc.

Professor Pat Dillon, Director of Research, Teagasc; Julie Dowsett, Programme Director of Professional Diploma in Research UCD; Professor Frank O'Mara, Director of Teagasc; Professor Mark Rogers, Acting President of UCD; Jane Kavanagh, Research Development and Walsh Scholarships Teagasc and Professor Frank Monahan, Dean of Agriculture, Head of Agriculture & Food Science, UCD attending the launch of the first Professional Diploma in Research Development (Teagasc) in UCD.

Energy Report

Teagasc operates out of fifty-five primary locations nationwide varying in scale from large multibuilding campuses to small local advisory offices; the locations break down into:

- 10 Large Campuses averaging at just over 6,500m² of treated/conditioned floor area
- 45 Advisory Offices averaging at just under 340m² of treated/conditioned floor area

In 2022, Teagasc consumed 25,182,751 kWh of energy, which is a reduction of almost 2.3% on consumption in 2021. This is a considerable achievement when taking into account that Teagasc's Full Time Equivalent (FTE) employees, which incorporates staff, students and additionally in 2022, Ukrainian Refugees, has increased by 13%. The energy breakdown is as follows:

- 9,955,741 kWh of electricity (39.5% of total energy);
- 8,691,324 kWh of thermal fuel for space heating (34.5% of total energy);
- 4,390,340 kWh of vehicle fuel, consisting of agricultural, commercial transport and car fleet (17.5% of total energy);
- 2,145,346 kWh of renewable fuels (8.5% of total energy - this figure does not take account the portion of purchased electricity which is generated from renewable sources or the renewable fuel element of purchased transport fuels).

In April 2022 Teagasc launched its energy and decarbonisation strategy 'Towards 2030' which identifies

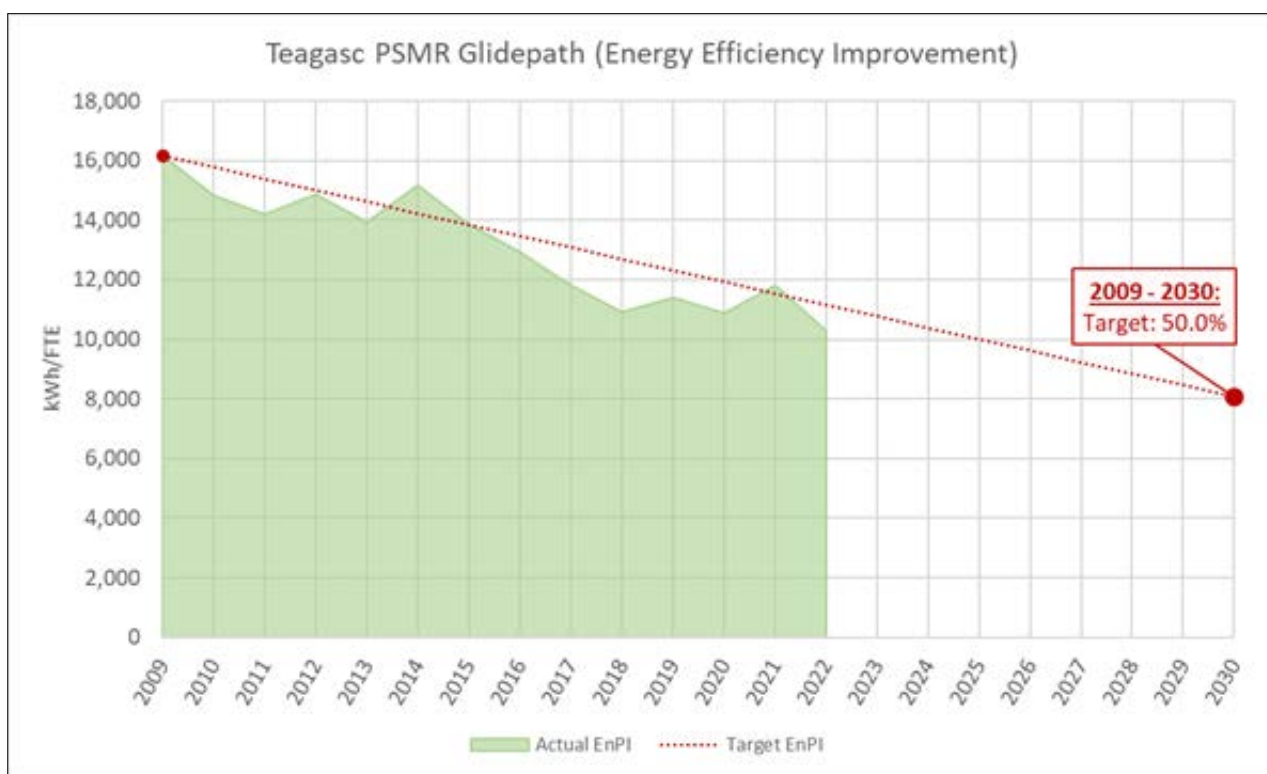
a pathway to achieving the government's 2030 energy efficiency and carbon reduction targets. These include a 50% energy efficiency improvement (based on 2009 as a baseline) and a new carbon emission reduction target of 51%.

The activities within Teagasc's built environment are the principal energy consumer accounting for approximately 82.6% of total consumption. Teagasc is conducting condition surveys on all of its buildings and is progressing a five year project plan for the upgrade and modernisation of advisory offices. Funds have been allocated to Enniscorthy, Dungarvan & Macroom Advisory Offices in 2023 with further projects being progressed through design stage in 2023.

In 2022, lighting in seven research centres and colleges were upgraded to LED energy efficient lights, generating savings of approx. 1,217,749 kWh. The remainder of the centres and colleges will be completed in 2023 generating a total of 1,752,784 kWh savings.

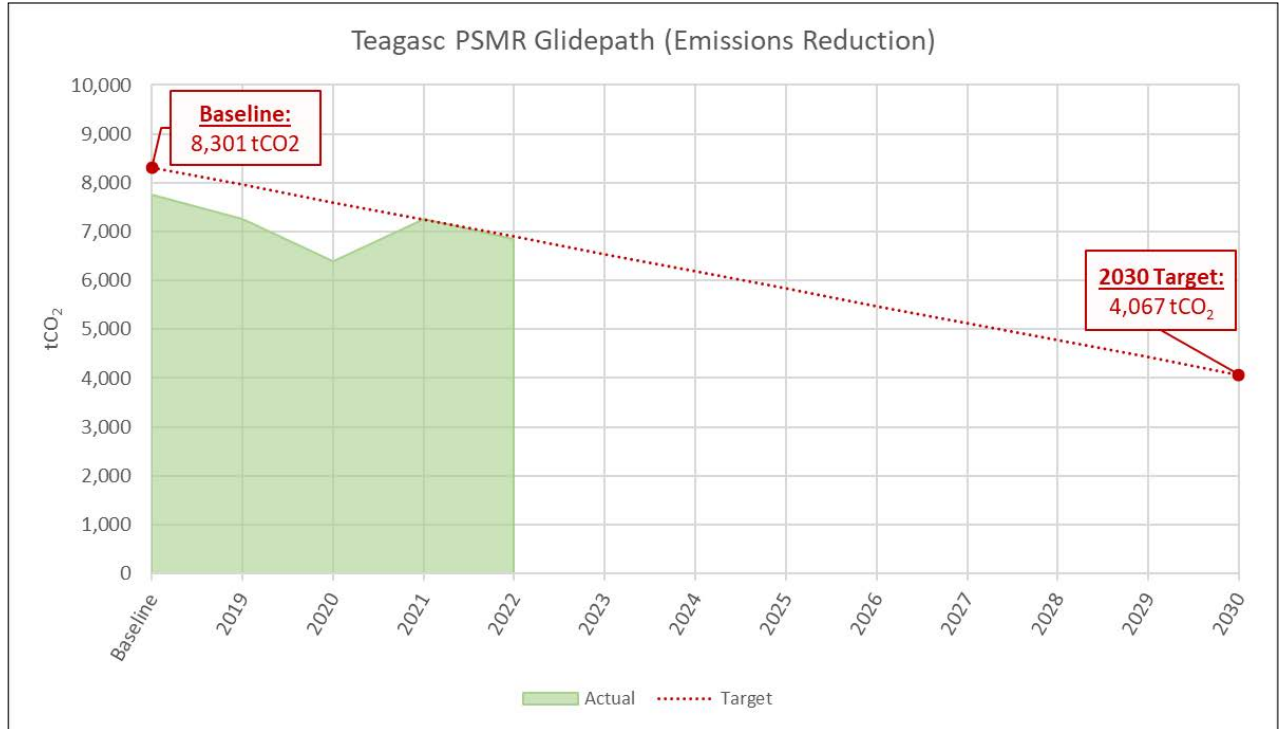
In 2022, two solar PV projects were completed having commenced in 2021 (Moorepark Piggery & Johnstown Castle Beef Farm). One large (Grange Research Centre) and six smaller PV projects were initiated. In 2023 it is intended to initiate three further large projects (circa 150 kWp) along with six smaller projects (circa 10kWp). In total, it is anticipated that approx. 806,456 kWh of electricity will be offset.

The above measures, along with other initiatives in 2022, saw Teagasc take another step towards achieving our energy efficiency improvements (EnPI) 2030 targets with an increase to 36.4%. While this means that Teagasc is progressing towards meeting its 2030 targets, the overall achievement will require sustained annual investment up to 2030.

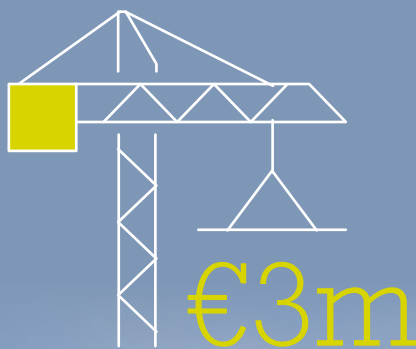


Carbon Report

In addition to the energy efficiency improvements the Government's Climate Action Plan also requires all public sector organisations to reduce CO₂ equivalent emissions by 51% compared to the average emissions over a three year baseline period 2016 to 2018. By 2030, Teagasc must reduce its total CO₂ emissions to 4,067 tCO₂. In 2022, Teagasc produced 6,856 tCO₂: this is a reduction on 2021 and keeps Teagasc along the required trajectory to meet its 2030 targets.



Funding of €3 million was announced to build new accommodation at the Teagasc Ballyhaise Agricultural College in County Cavan. Plans for the new development were reviewed by the Minister for Agriculture, Food and the Marine, Charlie McConalogue TD, when he was joined by Teagasc chairman Liam Herlihy to turn the sod on the new development.



funding of €3 million was announced by the Department of Agriculture, Food and the Marine



Report of the Authority and Consolidated Financial Statements

**Financial Year Ended
31 December 2022**

CONTENTS	Page
REPORT OF THE COMPTROLLER AND AUDITOR GENERAL	65
GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT	67
STATEMENT ON INTERNAL CONTROL	73
CONSOLIDATED STATEMENT OF INCOME AND EXPENDITURE	75
CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME	76
STATEMENT OF CONSOLIDATED AND TEAGASC FINANCIAL POSITION	77
CONSOLIDATED STATEMENT OF CHANGES IN CAPITAL AND RESERVES	78
TEAGASC STATEMENT OF CHANGES IN CAPITAL AND RESERVES	79
CONSOLIDATED STATEMENT OF CASH FLOW	80
NOTES TO THE CONSOLIDATED FINANCIAL STATEMENTS	81 - 109

**ARD REACHTAIRE CUNTAS AGUS CISTE
COMPTROLLER AND AUDITOR GENERAL**

REPORT FOR PRESENTATION TO THE HOUSES OF THE OIREACHTAS TEAGASC – THE AGRICULTURE AND FOOD DEVELOPMENT AUTHORITY

Opinion on the financial statements

I have audited the financial statements of Teagasc for the year ended 31 December 2022 as required under the provisions of section 12 of the Agriculture (Research, Training and Advice) Act 1988. The financial statements comprise

- the consolidated statement of income and expenditure
- the consolidated statement of comprehensive income
- the statement of financial position of the group and of Teagasc
- the consolidated statement of changes in capital and reserves
- the statement of changes in capital and reserves of Teagasc
- the consolidated statement of cash flows, and
- the related notes, including a summary of significant accounting policies.

In my opinion, the financial statements give a true and fair view of the assets, liabilities and financial position of the group and of Teagasc at 31 December 2022 and of the group's income and expenditure for 2022 in accordance with Financial Reporting Standard (FRS) 102 — *the Financial Reporting Standard applicable in the UK and the Republic of Ireland*.

Basis of opinion

I conducted my audit of the financial statements in accordance with the International Standards on Auditing (ISAs) as promulgated by the International Organisation of Supreme Audit Institutions. My responsibilities under those standards are described in the appendix to this report. I am independent of Teagasc and have fulfilled my other ethical responsibilities in accordance with the standards. I believe that the audit evidence I have obtained is sufficient and appropriate to provide a basis for my opinion.

Report on information other than the financial statements, and on other matters

Teagasc has presented certain other information together with the financial statements. This comprises the annual report, the governance statement and Authority members' report, and the statement on internal control. My responsibilities to report in relation to such information, and on certain other matters upon which I report by exception, are described in the appendix to this report. I have nothing to report in that regard.



Seamus McCarthy
Comptroller and Auditor General 27 June 2023

APPENDIX TO THE REPORT

Responsibilities of Authority members

As detailed in the governance statement and Authority members' report, the Authority members are responsible for

- the preparation of annual financial statements in the form prescribed under section 12 of the Agriculture (Research, Training and Advice) Act 1988
- ensuring that the financial statements give a true and fair view in accordance with FRS 102
- ensuring the regularity of transactions
- assessing whether the use of the going concern basis of accounting is appropriate, and
- such internal control as they determine is necessary to enable the preparation of financial statements that are free from material misstatement, whether due to fraud or error.

Responsibilities of the Comptroller and Auditor General

I am required under section 12 of the Agriculture (Research, Training and Advice) Act 1988 to audit the financial statements of Teagasc and to report thereon to the Houses of the Oireachtas.

My objective in carrying out the audit is to obtain reasonable assurance about whether the financial statements as a whole are free from material misstatement due to fraud or error. Reasonable assurance is a high level of assurance, but is not a guarantee that an audit conducted in accordance with the ISAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in the aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of these financial statements.

As part of an audit in accordance with the ISAs, I exercise professional judgment and maintain professional scepticism throughout the audit. In doing so,

- I identify and assess the risks of material misstatement of the financial statements whether due to fraud or error; design and perform audit procedures responsive to those risks; and obtain audit evidence that is sufficient and appropriate to provide a basis for my opinion. The risk of not detecting a material misstatement resulting from fraud is higher than for one resulting from error, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal control.
- I obtain an understanding of internal control relevant to the audit in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the internal controls.
- I evaluate the appropriateness of accounting policies used and the reasonableness of accounting estimates and related disclosures.

I conclude on the appropriateness of the use of the going concern basis of accounting and, based on the audit evidence obtained, on whether a material uncertainty exists related to events or conditions that may cast significant doubt on Teagasc's ability to continue as a going concern. If I conclude that a material uncertainty exists, I am required to draw attention in my report to the related disclosures in the financial statements or, if such disclosures are inadequate, to modify my opinion. My conclusions are based on the audit evidence obtained up to the date of my report. However, future events or conditions may cause Teagasc to cease to continue as a going concern.

- I evaluate the overall presentation, structure and content of the financial statements, including the disclosures, and whether the financial statements represent the underlying transactions and events in a manner that achieves fair presentation.

I communicate with those charged with governance regarding, among other matters, the planned scope and timing of the audit and significant audit findings, including any significant deficiencies in internal control that I identify during my audit.

I report by exception if, in my opinion,

- I have not received all the information and explanations I required for my audit, or
- the accounting records were not sufficient to permit the financial statements to be readily and properly audited, or
- the financial statements are not in agreement with the accounting records.

Information other than the financial statements

My opinion on the financial statements does not cover the other information presented with those statements, and I do not express any form of assurance conclusion thereon.

In connection with my audit of the financial statements, I am required under the ISAs to read the other information presented and, in doing so, consider whether the other information is materially inconsistent with the financial statements or with knowledge obtained during the audit, or if it otherwise appears to be materially misstated. If, based on the work I have performed, I conclude that there is a material misstatement of this other information, I am required to report that fact.

Reporting on other matters

My audit is conducted by reference to the special considerations which attach to State bodies in relation to their management and operation. I report if I identify material matters relating to the manner in which public business has been conducted.

I seek to obtain evidence about the regularity of financial transactions in the course of audit. I report if I identify any material instance where public money has not been applied for the purposes intended or where transactions did not conform to the authorities governing them.

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Governance

The Authority of Teagasc was established under the Agriculture (Research, Training and Advice) Act, 1988. The functions of the Authority are set out in the First Schedule of this Act. The Authority is accountable to the Minister for Agriculture, Food and the Marine and is responsible for ensuring good governance and performs this task by setting strategic objectives and targets and taking strategic decisions on all key business issues. The regular day-to-day management, control and direction of Teagasc are the responsibility of the Director and the senior management team. The Director and the senior management team must follow the broad strategic direction set by the Authority, and must ensure that all Authority members have a clear understanding of the key activities and decisions related to the entity, and of any significant risks likely to arise. The Director acts as a direct liaison between the Authority and management of Teagasc.

Teagasc is a registered charity in the Republic of Ireland (Registered Charity Number 20022754) and is granted charitable status under Section 207 of the Taxes Consolidation Act 1997 (CHY 9086).

Authority responsibilities

The work and responsibilities of the Authority are set out in the Agriculture (Research, Training and Advice) Act, 1988, which also contains the matters specifically reserved for Authority decision. Standing items considered by the Authority include:

- declaration of interests,
- reports from committees,
- financial reports/ management accounts,
- performance reports, and
- reserved matters.

Section 12(1) of the Agriculture (Research, Training and Advice) Act, 1988, in conjunction with S.I. No.418 of 2011, requires the Authority of Teagasc to keep, in such form as may be approved by the Minister for Agriculture, Food and the Marine with consent of the Minister for Public Expenditure and Reform, all proper and usual accounts of money received and expended by it.

In preparing these financial statements the Authority of Teagasc is required to:

- select suitable accounting policies and apply them consistently,
- make judgements and estimates that are reasonable and prudent,
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that it will continue in operation, and
- state whether applicable accounting standards have been followed, subject to any material departures disclosed and explained in the financial statements.

The Authority is responsible for keeping adequate accounting records which disclose, with reasonable accuracy at any time, its financial position and enables it to ensure that the financial statements comply with Section 12(1) of the Agriculture (Research, Training and Advice) Act, 1988. The maintenance and integrity of the corporate and financial information on the Teagasc website is the responsibility of the Authority.

The Authority is responsible for approving the annual business plan and budget. An evaluation of the performance of Teagasc by reference to the annual business plan and budget was carried out on 04 January 2022.

The Authority is also responsible for safeguarding its assets and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Authority considers that the financial statements of Teagasc give a true and fair view of the financial performance and the financial position of Teagasc at 31 December 2022.

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Authority performance review

An external performance evaluation of how the Authority of Teagasc operates was undertaken in 2020.

Authority structure

The Authority consists of a Chairperson and ten ordinary members, all of whom are appointed by the Minister for Agriculture, Food and the Marine. The members of the Authority are typically appointed for a period of five years (and may be re-appointed for a second term to a maximum of eight years in total) and meet on a monthly basis, except in August. The table below details the appointment period for the Authority members in place during 2022:

Authority member	Role	Period of appointment
Herlihy, Mr. Liam	Chairperson	17 September 2018 – 16 September 2023
Buckley, Mr. John	Ordinary Member	28 September 2018 – 27 September 2023
Donnelly, Ms. Martina	Ordinary Member	10 October 2019 – 09 October 2024
Duffy, Mr. Patrick	Ordinary Member	28 September 2018 – 27 September 2023
Fitzgerald, Prof. Gerald	Ordinary Member	15 September 2013 – 14 September 2023
Hennessy, Prof. Thia	Ordinary Member	23 May 2018 – 22 May 2023
O'Connell, Ms. Eilís	Ordinary Member	30 October 2018 – 21 January 2023
Reynolds, Ms. Elizabeth	Ordinary Member	07 July 2020 – 06 July 2025
Rushe, Mr. Brian	Ordinary Member	27 January 2020 – 26 January 2025
Scully, Mr. Donald	Ordinary Member	06 January 2022 – 05 January 2027
Woulfe, Mr. Liam	Ordinary Member	29 April 2015 – 28 April 2020 and 03 July 2020 – 02 July 2025

The Authority has established five committees, as follows:

1. Audit and Risk Committee (ARC): comprises three Authority members and one external member. The role of the ARC is to support the Authority in relation to its responsibilities for issues of risk, control and governance and associated assurance. The ARC is independent from the financial management of the organisation. In particular the committee ensures that the internal control systems including audit activities are monitored actively and independently. The ARC reports to the Authority after each meeting, and formally in writing annually.

The members of this committee during 2022 were: Prof. Thia Hennessy, Chairperson, Ms. Eilís O'Connell and Ms. Elizabeth Reynolds. The external member was Mr. Noel O'Connell.

In November 2022 Mr. Noel O'Connell was replaced as the external member of the committee by Ms. Ita Howe. There were four meetings of the ARC in 2022.

2. Operations Committee (OC): comprises five Authority members. The role of the OC is to support the Authority in reviewing and considering matters relating to the Operations Programme in Teagasc and to report and make recommendations to the Authority, as well as adopting good practice. The members of this committee during 2022 were: Mr. Liam Woulfe, Chairperson, Mr. Liam Herlihy, Ms. Elizabeth Reynolds, Ms. Martina Donnelly and Mr. Patrick Duffy.

In October 2022 Mr. Patrick Duffy replaced Mr. Liam Woulfe as chair of the committee. There were three meetings of the OC in 2022.

3. Advisory & Education Committee (AEC): comprises five Authority members. The role of the AEC is to support the Authority in reviewing and considering matters relating to the Advisory and Education Programmes in Teagasc and to report and make recommendations to the Authority, as well as adopting good practice. The members of this committee during 2022 were: Mr. John Buckley, Chairperson, Mr. Brian Rushe, Mr. Patrick Duffy, Ms. Martina Donnelly and Mr. Donald Scully. There were two meetings of the AEC in 2022.

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

4. Research Committee (RC): comprises five Authority members. The role of the RC is to support the Authority in reviewing and considering matters relating to the Research Programme in Teagasc and to report and make recommendations to the Authority, as well as adopting good practice. The members of this committee during 2022 were: Prof. Gerald Fitzgerald, Chairperson, Ms. Martina Donnelly, Mr. John Buckley, Prof. Thia Hennessy and Mr. Brian Rushe. There were three meetings of the RC in 2022.

5. Nominations Committee (NC): comprises five Authority members. The role of the NC is to consider vacancies on the Teagasc Authority and make recommendations on how best to fill the vacancies. The members of this committee during 2022 were: Mr. Liam Herlihy, Chairperson, Prof. Gerald Fitzgerald, Ms. Elizabeth Reynolds, Prof. Thia Hennessy and Mr. Patrick Duffy. There was one meeting of the NC in 2022.

Schedule of attendance, fees and expenses

Schedule of attendances at the Authority and Committee meetings for 2022 is set out below including the fees and expenses received by each member:

Authority 2022	Meetings	05 Jan	02 Feb	01 Mar	02 Mar	06 Apr	04 May	01 Jun	06 Jul	07 Sep	05 Oct	02 Nov	07 Dec	Fees 2022 €	Expenses 2022 €
Herlihy, Mr. Liam		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	20,520	7,109
Buckley, Mr. John		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11,970	3,885
Donnelly, Ms. Martina		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	4,858
Duffy, Mr. Patrick		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11,970	2,627
Fitzgerald, Prof. Gerald		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	11,970	1,708
Hennessy, Prof. Thia		-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	2,770
O'Connell, Ms. Eilís		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	526
Reynolds, Ms. Elizabeth		✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	11,970	507
Rushe, Mr. Brian		✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	11,970	198
Scully, Mr. Donald			✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	10,973	936
Woulfe, Mr. Liam		✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	11,970	1,673
														103,313	26,797

Teagasc incurred hospitality and accommodation expenses of €16,526 on behalf of Authority members in 2022. Three Authority members did not receive a fee under the One Person One Salary (OPOS) principle. Mr. Noel O'Connell, external member of the ARC, received fees of €3,900 in 2022. Ms. Ita Howe, external member of the ARC, did not receive a fee under the One Person One Salary (OPOS) principle.

Gender Balance in the Authority membership

As at 31 December 2022 the Authority had four (36%) female and seven (64%) male members, the Authority is currently below the Government target of a minimum of 40% representation of each gender in the membership of State Boards as set out in the Annex to the Code of Practice for the Governance of State Bodies issued in September 2020. A number of Authority members will retire, upon reaching cessation of second-term appointments in 2023, and gender balance and diversity requirements will be an important consideration when nominating replacement members to the Authority.

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT

Audit & Risk Committee	18 Feb	06 Jul	24 Oct	09 Dec
Hennessy, Prof. Thia	√	√	√	√
Howe, Ms. Ita				√
O'Connell, Ms. Eilís	√	√	√	√
O'Connell, Mr. Noel	√	√	√	
Reynolds, Ms. Elizabeth	√	√	√	√

Operations Committee	21 Feb	14 Sep	14 Dec
Duffy, Mr. Patrick	√	√	√
Donnelly, Ms. Martina	√	√	√
Herlihy, Mr. Liam	√	√	√
Reynolds, Ms. Elizabeth	√	√	√
Woulfe, Mr. Liam			√

Research Committee	01 Jun	16 Jun	07 Dec
Fitzgerald, Prof. Gerald	√	√	√
Buckley, Mr. John	√	√	√
Donnelly, Ms. Martina	√	√	√
Hennessy, Prof. Thia	√	√	√
Rushe, Mr. Brian	√	√	√

Advisory & Education Committee	26 Apr	29 Nov
Buckley, Mr. John	√	√
Donnelly, Ms. Martina	√	√
Duffy, Mr. Patrick	√	√
Rushe, Mr. Brian	√	√
Scully, Mr. Donald	√	√

Nominations Committee	28 Sep
Herlihy, Mr. Liam	√
Duffy, Mr. Patrick	-
Fitzgerald, Prof. Gerald	√
Hennessy, Prof. Thia	√
Reynolds, Ms. Elizabeth	√

Key personnel changes

There was one new appointment to the Authority and no retirement from the Authority in 2022.

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT**Disclosures required by the Code of Practice for the Governance of State Bodies (2016)**

The Authority is responsible for ensuring that Teagasc has complied with the requirements of the Code of Practice for the Governance of State Bodies ("the Code"), as published by the Department of Public Expenditure and Reform in August 2016. The following disclosures are required by the Code:

Consultancy costs

Consultancy costs include the cost of external advice to management and exclude outsourced 'business-as-usual' functions.

	2022	2021
	€'000	€'000
Legal advice	279	250
Financial/ tax advice	43	86
Pensions/ human resources advice	125	147
Architectural/ engineering advice	942	701
Research advice	475	260
Other	391	309
Total consultancy costs	<u>2,255</u>	<u>1,753</u>
Consultancy costs capitalised	922	569
Consultancy costs charged to Income and Expenditure and Retained Revenue Reserves	<u>1,333</u>	<u>1,184</u>
Total	<u>2,255</u>	<u>1,753</u>

Legal costs and settlements

The expenditure in the reporting period on legal costs, settlements and conciliation and arbitration proceedings relating to contracts with third parties. This does not include expenditure incurred in relation to general legal advice received by Teagasc which is disclosed in consultancy costs above.

	2022	2021
	€'000	€'000
Legal fees – legal proceedings	29	14
Counterparty legal costs	-	-
Settlements	<u>98</u>	<u>93</u>
Total	<u>127</u>	<u>107</u>

The total number of cases included in the 2022 settlements is 14 (2021: 16).

Travel and subsistence expenditure

Travel and subsistence expenditure is categorised as follows:

	2022	2021
	€'000	€'000
Domestic		
Authority	27	16
Employees	4,160	1,975
International		
Authority	-	-
Employees	<u>723</u>	<u>78</u>
	<u>4,910</u>	<u>2,069</u>

GOVERNANCE STATEMENT AND AUTHORITY MEMBERS' REPORT**Hospitality expenditure**

The Statement of Income and Expenditure includes the following hospitality expenditure:


	2022	2021
	€'000	€'000
Staff hospitality	37	50
Client hospitality	42	64
Total	79	114

In addition to the above in accordance with their employment/ placement agreements some staff and students are entitled to meals in college canteens. The cost of provision of these meals in 2022 was €46,694 (2021: €20,485).

Statement of compliance

The Authority has adopted the Code of Practice for the Governance of State Bodies (2016) and has put procedures in place to ensure compliance with the Code. Teagasc was in compliance with the Code of Practice for the Governance of State Bodies for 2022.

Teagasc is a signatory of the Charities Governance Code, which is overseen by the Irish Charities Regulator. The Authority reviewed and approved Teagasc's annual report form in October 2022.



Mr. Liam Herlihy
Chairman
21 June 2023



Ms. Martina Donnelly
Member of the Authority
21 June 2023

STATEMENT ON INTERNAL CONTROL

Scope of responsibility

On behalf of Teagasc I acknowledge the Authority's responsibility for ensuring that an effective system of internal control is maintained and operated. This responsibility takes account of the requirements of the Code of Practice for the Governance of State Bodies (2016) and the Charities Governance Code.

Purpose of the system of internal control

The system of internal control is designed to manage risk to a tolerable level rather than to eliminate it. The system can therefore only provide reasonable and not absolute assurance that assets are safeguarded, transactions authorised and properly recorded and that material errors or irregularities are either prevented or detected in a timely way.

The system of internal control, which accords with guidance issued by the Department of Public Expenditure and Reform, has been in place in Teagasc for the year ended 31 December 2022 and up to the date of approval of the financial statements.

Capacity to handle risk

Teagasc has an Audit and Risk Committee (ARC) comprising three Authority members, one of whom is the Chair, and one external member with financial and audit expertise. The ARC met four times in 2022.

Teagasc has also established an internal audit function which is adequately resourced and conducts a programme of work agreed with the ARC. The function is supported by external firms providing internal audit services.

The ARC has reviewed the risk management policy which sets out Teagasc's risk appetite, the risk management processes in place and details the roles and responsibilities of staff in relation to risk. The policy has been made available to all staff who are expected to work within Teagasc's risk management policies, to alert management on emerging risks and control weaknesses and assume responsibility for risks and controls within their own area of work.

Risk and control framework

Teagasc has implemented a risk management system which identifies and reports key risks and the management actions being taken to address and, to the extent possible, to mitigate those risks.

A risk register is in place which identifies the key risks facing Teagasc. The risks have been identified, evaluated and graded according to their significance. The register is reviewed by the Authority monthly and by the ARC quarterly. The outcome of these assessments is used to plan and allocate resources to ensure risks are managed to an acceptable level.

The risk register details the controls and actions needed to mitigate risks. Responsibility for operation of controls assigned to specific staff. I confirm that within the Teagasc control environment:

- procedures for all key business processes are documented,
- financial responsibilities are assigned at management level with corresponding accountability,
- there is an appropriate budgeting system with an annual budget which is kept under review by senior management,
- there are systems aimed at ensuring the security of the information and communication technology systems,
- there are systems in place to safeguard the assets, and
- control procedures over grant funding to outside agencies ensure adequate control over approval of grants and monitoring and review of grantees to ensure grant funding has been applied for the purpose intended.

STATEMENT ON INTERNAL CONTROL

Ongoing monitoring and review

Formal procedures have been established for monitoring control processes and control deficiencies are communicated to those responsible for taking corrective action, and to management and the Authority where relevant, in a timely way. I confirm that the following ongoing monitoring systems are in place:

- key risks and related controls have been identified and processes have been put in place to monitor the operation of those key controls and report any identified deficiencies,
- reporting arrangements have been established at all levels where responsibility for financial management has been assigned, and
- there are regular reviews by senior management of periodic and annual performance and financial reports which indicate performance against budgets/ forecasts.

Procurement

I confirm that Teagasc has procedures in place to ensure compliance with procurement rules and guidelines. Total procurement related expenditure was €69.9m in 2022.

Teagasc monitors the compliance status of its purchase orders. In 2022 Teagasc found that of 340 purchase orders for value in excess of €25,000, with total value of €30.5m, the value of non-compliant purchase orders was €497,566 (2021: €484,821). Of this value deemed non-compliant, €293,448 resulted from expired contracts that have since been tendered appropriately and new contracts implemented. Notwithstanding that these procurements were non-compliant Teagasc is satisfied that good value for money was achieved.

Advance payment of grants

I confirm that Teagasc has procedures in place to ensure compliance of pre-funded grants. Teagasc provides advance grant funding to private agricultural colleges and to universities. Teagasc was given derogated sanction from the Department of Public Expenditure and Reform for pre-funding these grants for 2022.

Review of effectiveness

I confirm that Teagasc has procedures to monitor the effectiveness of its risk management and control procedures which is informed by the work of the internal and external auditors, the Audit and Risk Committee which oversees their work, and the senior management within Teagasc responsible for the development and maintenance of the internal control framework.

I confirm that the Authority conducted an annual review of the effectiveness of the internal controls for 2022 on 01 February 2023.

Internal control issues

No weaknesses in internal control that require disclosure in the financial statements were identified in relation to 2022 apart from non-compliance purchase orders.



Mr. Liam Herlihy
Chairman
21 June 2023

CONSOLIDATED STATEMENT OF INCOME AND EXPENDITURE
YEAR ENDED 31 DECEMBER 2022

	Note	2022 €'000	2021 €'000
Income			
Oireachtas grants	4	159,805	141,398
EU funding	5	5,163	4,365
Livestock trading income		4,668	4,579
Operational income	6	48,932	37,650
(Loss)/ gain on disposal of fixed assets	12	(44)	793
Other grants, donations and voluntary levies		3,690	3,525
Sale of goods		89	47
Research and technology services		2,200	1,916
Total Income		<u>224,503</u>	<u>194,273</u>
Expenditure	7	<u>(215,625)</u>	<u>(184,669)</u>
Operating surplus		8,878	9,604
Interest receivable		2	1
Surplus before transfers and taxation		8,880	9,605
Transfer to Capital Account	23	<u>(8,076)</u>	<u>(7,618)</u>
Surplus for the financial year before taxation		804	1,987
Taxation	11	<u>55</u>	<u>25</u>
Surplus for the financial year		<u>859</u>	<u>2,012</u>
Surplus attributable to			
Teagasc		1,041	2,101
Non-controlling interest		<u>(182)</u>	<u>(89)</u>
		<u>859</u>	<u>2,012</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.



Mr. Liam Herlihy
Chairman
21 June 2023




Professor Frank O'Mara
Director
21 June 2023

CONSOLIDATED STATEMENT OF COMPREHENSIVE INCOME
YEAR ENDED 31 DECEMBER 2022

		2022	2021
	Note	€'000	€'000
Surplus for the financial year		859	2,012
Actuarial gain/ (loss) on retirement benefit liabilities	10	458,987	(54,458)
Adjustment to deferred retirement benefit funding	10	(458,987)	54,458
Total comprehensive income for the year		<u>859</u>	<u>2,012</u>
Teagasc		1,041	2,101
Non-controlling interest		(182)	(89)
		<u>859</u>	<u>2,012</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.



Mr. Liam Herlihy
Chairman
21 June 2023



Professor Frank O'Mara
Director
21 June 2023

STATEMENT OF FINANCIAL POSITION
AS AT 31 DECEMBER 2022

		Group		Teagasc	
		2022	2021	2022	2021
	Note	€'000	€'000	€'000	€'000
Non-current assets					
Property, plant and equipment	12	143,675	136,055	132,029	123,953
Investments	14	647	676	648	677
		144,323	136,731	132,677	124,630
Current assets					
Inventories	15	7,423	6,776	7,423	6,776
Receivables: amounts falling due within one year	17	33,501	25,873	32,415	25,297
Cash and cash equivalents	18	45,873	51,162	43,582	48,611
		86,796	83,811	83,420	80,684
Payables: amounts falling due within one year					
Payables and accruals	19	22,906	22,741	21,764	21,750
Deferred income	21	28,779	23,560	28,471	23,372
		51,685	46,301	50,235	45,122
Net current assets					
		35,111	37,510	33,185	35,562
Total assets less current liabilities					
		179,434	174,241	165,862	160,192
Provisions for liabilities					
Deferred tax	22	(17)	37	-	-
Payables: amounts falling due after one year					
Deferred income	21	13,260	16,948	13,201	16,888
Payables and accruals	20	406	406	-	-
		165,785	156,850	152,661	143,304
Deferred retirement benefit funding	10	957,928	1,414,380	957,928	1,414,380
Retirement benefit liabilities	10	(957,928)	(1,414,380)	(957,928)	(1,414,380)
Net assets					
		165,785	156,850	152,661	143,304
Capital and reserves					
Capital account	23	132,029	123,953	132,029	123,953
Revenue reserves	24	21,011	20,152	20,632	19,351
Capital contribution		12,745	12,745	-	-
		165,785	156,850	152,661	143,304
Reserves attributable to Teagasc					
		159,275	150,158	152,661	143,304
Non-controlling interest		6,510	6,692	-	-
		165,785	156,850	152,661	143,304

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.



Mr. Liam Herlihy
Chairman
21 June 2023



Professor Frank O'Mara
Director
21 June 2023

**CONSOLIDATED STATEMENT OF CHANGES IN CAPITAL AND RESERVES
AS AT 31 DECEMBER 2022**
GROUP

		Capital account	Capital contribution	Revenue reserves	Capital contribution	Total
				Non- controlling interest	Non- controlling interest	
	Note	€'000	€'000	Group €'000	€'000	€'000
At 1 January 2021		116,335	6,400	17,704	436	147,220
Surplus/ (deficit) for the year		-	-	2,101	(89)	2,012
Actuarial loss on retirement benefit liabilities	10	-	-	(54,458)	-	(54,458)
Adjustment to deferred retirement benefit funding	10	-	-	54,458	-	54,458
Total comprehensive income		-	-	2,101	(89)	2,012
Addition to capital contribution		-	-	-	-	-
Amounts capitalised in respect of purchased assets	12	16,058	-	-	-	16,058
Net amount released on disposals	12	(253)	-	-	-	(253)
Less: amortised in line with asset depreciation	12	(8,187)	-	-	-	(8,187)
At 31 December 2021		123,953	6,400	19,805	347	156,850
			150,158		6,692	156,850
Surplus/ (deficit) for the year		-	-	1,041	(182)	859
Actuarial gain on retirement benefit liabilities	10	-	-	458,987	-	458,987
Adjustment to deferred retirement benefit funding	10	-	-	(458,987)	-	(458,987)
Total comprehensive income		-	-	1,041	(182)	859
Amounts capitalised in respect of purchased assets	12	17,355	-	-	-	17,355
Net amount released on disposals	12	50	-	-	-	50
Less: amortised in line with asset depreciation	12	(9,230)	-	-	-	(9,230)
At 31 December 2022		132,029	6,400	20,846	165	165,785
			159,275		6,510	165,785

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

STATEMENT OF CHANGES IN CAPITAL AND RESERVES
AS AT 31 DECEMBER 2022

TEAGASC

		Capital account	Revenue reserves	Total
	Note	€'000	€'000	€'000
At 1 January 2021		116,335	17,132	133,467
Surplus for the year		-	2,219	2,219
Actuarial loss on retirement benefit liabilities	10	-	(54,458)	(54,458)
Adjustment to deferred retirement benefit funding	10	-	54,458	54,458
Total comprehensive income		-	2,219	2,219
Amounts capitalised in respect of purchased assets	12	16,058	-	16,058
Net amount released on disposals	12	(253)	-	(253)
Less: amortised in line with asset depreciation	12	(8,187)	-	(8,187)
At 31 December 2021		123,953	19,351	143,304
Surplus for the year		-	1,281	1,281
Actuarial gain on retirement benefit liabilities	10	-	458,987	458,987
Adjustment to deferred retirement benefit funding	10	-	(458,987)	(458,987)
Total comprehensive income		-	1,281	1,281
Amounts capitalised in respect of purchased assets	12	17,355	-	17,355
Net amount released on disposals	12	50	-	50
Less: amortised in line with asset depreciation	12	(9,230)	-	(9,230)
At 31 December 2022		132,029	20,632	152,661

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

**CONSOLIDATED STATEMENT OF CASH FLOW
AS AT 31 DECEMBER 2022**
GROUP

		2022	2021
	Note	€'000	€'000
Cash flow from operating activities	27	12,556	23,707
Interest paid		(121)	(183)
Taxation		-	-
Net cash flow from operating activities		<u>12,435</u>	<u>23,524</u>
Cash flow from investing activities			
Payments to acquire tangible fixed assets	12	(17,779)	(16,771)
Receipts from sales of tangible fixed assets	12	53	1,067
Payments to acquire investments	14	-	(1)
Interest received		2	1
Net cash used in investing activities		<u>(17,724)</u>	<u>(15,704)</u>
Net increase in cash and cash equivalents		(5,289)	7,820
Cash and cash equivalents at 1 January		<u>51,162</u>	<u>43,342</u>
Cash and cash equivalents at 31 December		<u>45,873</u>	<u>51,162</u>
Cash and cash equivalents consists of:			
Cash at bank and in hand	18	25,486	30,728
Short term deposits	18	<u>20,387</u>	<u>20,434</u>
Cash and cash equivalents at 31 December		<u>45,873</u>	<u>51,162</u>

The Statement of Cash Flow and Notes 1-35 form part of these financial statements.

NOTES TO THE FINANCIAL STATEMENTS**1. General information**

Teagasc (the Agriculture and Food Development Authority of Ireland) was established under the Agriculture (Research, Training and Advice) Act, 1988. The mission of Teagasc is to support science-based innovation in the agri-food sector and the broader bioeconomy that will underpin profitability, competitiveness and sustainability. Teagasc's principal and registered office is at Oak Park, Carlow.

Teagasc owns a 57% share in Moorepark Technology Limited whose principal activity is the provision of services for Research and Development.

2. Summary of significant accounting policies

The basis of accounting, and significant accounting policies adopted by Teagasc, are set out below. They have all been applied consistently throughout the year and for the preceding year.

2.1 Statement of compliance

The financial statements of Teagasc for the year ended 31 December 2022 have been prepared in accordance with FRS 102, the financial reporting standard applicable in the UK and Ireland issued by the Financial Reporting Council (FRC).

2.2 Basis of consolidation

For the purposes of these financial statements, the 'Teagasc Group' comprises the parent entity Teagasc and its subsidiary Moorepark Technology Limited. The accounting policies and accounting period of the subsidiary are consistent with those of the Group. Inter-company transactions and balances and gains on transactions between group companies are eliminated. The investment in the subsidiary is accounted for at cost less impairment. Details of the subsidiary are provided in Note 14.

2.3 Basis of preparation

The financial statements have been prepared under the historical cost convention, except for certain assets and liabilities that are measured at fair values as explained in the accounting policies below. The financial statements are in the form approved by the Minister for Agriculture, Food and the Marine with the concurrence of the Minister for Public Expenditure and Reform under Section 12 of the Agriculture (Research, Training and Advice) Act, 1988 in conjunction with S.I. No.418 of 2011. The following accounting policies have been applied consistently in dealing with items which are considered material in relation to Teagasc's financial statements.

2.4 Revenue recognition*Oireachtas grants*

Teagasc receives government grants in respect of research and other projects (revenue grants) and capital grants to fund capital investment. Revenue grants that do not include performance criteria are recognised as income on a cash receipts basis. Grants received which impose specific performance criteria are credited to deferred income and recorded as a creditor until the relevant performance criteria have been met and the grants are recognised as income.

Sale of goods

Revenue from the sale of goods is recognised when the significant risks and rewards of ownership of the goods have passed to the buyer, usually on dispatch of the goods, the amount of revenue can be measured reliably, it is probable that the economic benefits associated with the transaction will flow to the entity and the costs incurred or to be incurred in respect of the transaction can be measured reliably.

NOTES TO THE FINANCIAL STATEMENTS

Advisory fees

Teagasc receives income for annual advisory service contracts, annual discussion group contracts and additional advisory services provided. Income from annual advisory service contracts, and discussion group contracts, is recognised in the accounting period when the relevant invoice has issued. Income in relation to additional advisory services is recognised in the accounting period in which the service is rendered and the outcome of the contract can be estimated reliably.

Accrued income

Income earned on goods/ services delivered, but unbilled, is recognised in accordance with contractual terms as accrued income on the Statement of Financial Position. Income earned on research projects, but unclaimed, is recognised as accrued income on the Statement of Financial Position, taking into account the individual rules of all funding bodies.

Royalty income

Royalty income is recognised on an accruals basis in accordance with the substance of the relevant agreements.

Tuition fees

Revenue is recognised over the period of instruction.

Comparative figures

Comparative figures have been regrouped and reanalysed, where necessary, on the same basis as those for the current period.

2.5 Employee benefits

The Group provides a range of benefits to employees, including paid holiday arrangements and defined benefit pension plans.

Short term benefits

Short term benefits, including holiday pay and other similar non-monetary benefits, are recognised as an expense in the period in which the service is receivable.

Defined benefit pension plans

The Group operates defined benefit pension schemes which are funded annually on a pay as you go basis from monies available to it, including monies provided by the Department of Agriculture, Food and the Marine, and from contributions deducted from staff salaries. Pension Scheme liabilities are measured on an actuarial basis using the projected unit method. Actuarial valuations are obtained annually and are updated at each Statement of Financial Position date.

Teagasc also operates the Single Public Services Pension Scheme (Single Scheme), which is the defined benefit scheme for pensionable public servants appointed on or after 01 January 2013. Single Scheme members' contributions are paid over to the Department of Public Expenditure and Reform.

Retirement benefit costs reflect retirement benefits earned by employees in the period and are shown net of staff pension contributions which are retained by the Group. The Single Public Services Pension Scheme contributions are remitted to the Department of Public Expenditure and Reform. An amount corresponding to the retirement benefit charge is recognised as income to the extent that it is recoverable, and offset by grants received in the year to discharge retirement benefit payments. Actuarial gains or losses arising from changes in actuarial assumptions and from experience surpluses and deficits are recognised in the Consolidated Statement of Comprehensive Income for the year and a corresponding adjustment is recognised in the amount recoverable from the Department of Agriculture, Food and the Marine.

Retirement benefit liabilities represent the present value of future retirement benefit payments earned by staff to date. Deferred retirement benefit funding represents the corresponding asset to be recovered in future periods from the Department of Agriculture, Food and the Marine.

2.6 Leases

At inception Teagasc assesses agreements that transfer the right to use assets. The assessment considers whether the arrangement is, or contains, a lease based on the substance of the arrangement.

Operating leases

Leases that do not transfer all the risks and rewards of ownership are classified as operating leases. Payments under operating leases are charged to the income statement on a straight-line basis over the period of the lease.

2.7 Taxation

The taxation expense for the period comprises current and deferred tax recognised in the reporting period. Tax is recognised in the income statement. Current or deferred taxation assets and liabilities are not discounted.

Current tax

Current tax is the amount of income tax payable in respect of the taxable profit for the year or prior years. Tax is calculated on the basis of tax rates and laws that have been enacted or substantively enacted by the period end.

Management periodically evaluates positions taken in tax returns with respect to situations in which applicable tax regulation is subject to interpretation. It establishes provisions where appropriate on the basis of amounts expected to be paid to the tax authorities.

Deferred tax

Deferred tax arises from timing differences that are differences between taxable profits and total comprehensive income as stated in the financial statements. These timing differences arise from the inclusion of income and expenses in tax assessments in periods different from those in which they are recognised in financial statements.

Deferred tax is recognised on all timing differences at the reporting date except for certain exceptions. Unrelieved tax losses and other deferred tax assets are only recognised when it is probable that they will be recovered against the reversal of deferred tax liabilities or other future taxable profits.

Deferred tax is measured using tax rates and laws that have been enacted or substantively enacted by the period end and that are expected to apply to the reversal of the timing difference.

2.8 Research and development

Expenditure on research activities is recognised as an expense in the period in which it is incurred.

2.9 Tangible assets

Property, plant and equipment

Property, plant and equipment are stated at cost less accumulated depreciation and accumulated impairment losses. Such costs include costs directly attributable to making the asset capable of operating as intended.

Land is not depreciated. Assets under construction are not depreciated. Depreciation is provided on all property, plant and equipment at rates calculated to write off the cost, less estimated residual value, of each asset on a systematic basis over its expected useful life as follows:

Computer equipment	3 years
Plant and vehicles	5 years
Laboratory and office equipment	10 years
Industrial plant and equipment	10 years
Farm buildings	20 years
Industrial and manufacturing buildings	30 years
Other buildings	50 years

A half year's depreciation is charged in the year of acquisition and disposal of assets.

The carrying values of property, plant and equipment are reviewed for impairment when events or changes in circumstances indicate that the carrying value may not be recoverable. If there is an indication of impairment the impairment loss, or the reversal of an impairment loss, is recognised immediately in the Consolidated Statement of Income and Expenditure.

The estimated useful lives, residual values and depreciation methods are reviewed, and adjusted as appropriate, at the end of each financial year.

The gain or loss, being the difference between the sales proceeds and the carrying amount of the asset, arising on disposal or retirement of an item of property, plant and equipment is recognised in the Consolidated Statement of Income and Expenditure. Any amount in the revaluation reserve relating to that asset is transferred to retained earnings directly.

Fully depreciated plant and equipment is retained in the financial statements until it is no longer in use.

Assets for re-sale

Tangible assets are classified as held for sale when the carrying amount is expected to be recovered principally through a sale transaction and a sale is highly probable. They are stated at the lower of carrying amount or fair value less cost to sell.

Impairment of non-financial assets

At each financial year end date non-financial assets not carried at fair value are assessed to determine whether there is an indication that the asset (or asset's cash generating unit) may be impaired. If there is such an indication the recoverable amount of the asset (or asset's cash generating unit) is compared to the carrying amount of the asset (or asset's cash generating unit).

2.10 Financial assets

Investment in subsidiary

The investment in the subsidiary Moorepark Technology Limited is measured at cost less impairment. If there is objective evidence of impairment, an impairment loss is recognised in the Consolidated Statement of Income and Expenditure in the year.

Other investments

Investments listed on a recognised stock exchange are measured at their fair value, and movements are recorded through the Consolidated Statement of Income and Expenditure and the Consolidated Statement of Comprehensive Income. Other financial assets comprising investments in unquoted shares and financial investments are measured at their fair value if this can be reliably determined; otherwise they are measured at the value attributed to them at the date of acquisition less impairment. If there is objective evidence of impairment, an impairment loss is recognised in the Consolidated Statement of Income and Expenditure and the Consolidated Statement of Comprehensive Income in the year.

2.11 Inventory

Biological assets

Livestock and own farm produce are valued using the fair value model. Fair value is determined on the basis that animals and own farm produce are sold on the open market. Gains and losses, which arise from these valuations, are reflected in full in operational income.

Other inventory

All other inventory is stated at the lower of cost and net realisable value.

2.12 Receivables

Receivables are recognised at fair value, less a provision for impairments. The provision for impairments is a specific provision, and is established when there is objective evidence that Teagasc will not be able to collect all amounts owed to it. All movements in the provision for impairments are recognised in the Consolidated Statement of Income and Expenditure.

2.13 Payables

Payables, including trade and other payables and deferred income, are initially recognised at transaction price, unless the arrangement constitutes a financing transaction, where the debt instrument is measured at the present value of the future receipts discounted at a market rate of interest. Advanced research income, where a portion of the funds is due to be paid to partnering organisations, is included in deferred income.

2.14 Provisions and contingencies*Provisions*

Provisions are recognised when the Group has a present legal or constructive obligation as a result of past events; it is probable that an outflow of resources will be required to settle the obligation; and the amount of the obligation can be estimated reliably.

Provisions are measured at the present value of the expenditures expected to be required to settle the obligation using a pre-tax rate that reflects current market assessments of the time value of money and the risks specific to the obligation. The increase in the provision due to passage of time is recognised as a finance cost.

Contingencies

Contingent liabilities, arising as a result of past events, are not recognised when (i) it is not probable that there will be an outflow of resources or that the amount cannot be reliably measured at the reporting date or (ii) when the existence will be confirmed by the occurrence or non-occurrence of uncertain future events not wholly within the Group's control. Contingent liabilities are disclosed in the financial statements unless the probability of an outflow of resources is remote.

Contingent assets are not recognised. Contingent assets are disclosed in the financial statements when an inflow of economic benefits is probable.

3. Critical accounting estimates and judgements

The preparation of the financial statements requires management to make judgements, estimates and assumptions that affect the amounts reported for assets and liabilities as at the Statement of Financial Position date and the amounts reported for revenues and expenses during the year. However, the nature of estimation means that actual outcomes could differ from those estimates.

The following judgements have had the most significant effect on amounts recognised in the financial statements:

Useful economic lives of property, plant and equipment

The Group depreciates the tangible fixed assets over their estimated useful lives after taking into account their estimated residual values. The estimated useful life reflects management's estimate of the period that the Group intends to derive future economic benefits from the use of the Group's tangible fixed assets. The residual value reflects management's estimated amount that the Group would currently obtain from the disposal of the asset, after deducting the estimated costs of disposal, as if the asset were already of the age and in the condition expected at the end of its useful life. Changes in the expected level of usage and technological developments could affect the economics, useful lives and the residual values of these assets which could then consequentially impact future depreciation charges. See Note 12 for the carrying amount of tangible fixed assets.

Valuation of investments

At the end of each financial year, an assessment is made on whether there are indicators that Teagasc's investment in the subsidiary is impaired. Where necessary, Teagasc's assessments are based on the estimation of the value-in-use of the assets by forecasting the expected future cash flows for a period of up to 5 years, using a suitable discount rate in order to calculate the present value of those cash flows. See Note 14 for the carrying amount of investments.

Impairment of receivables

Teagasc assesses receivables on a continuous basis for any objective evidence of impairment by considering factors, including the ageing profile, the creditworthiness and the past collection history of each debtor. If the financial conditions of these debtors were to deteriorate, resulting in an impairment of their ability to make payments, additional allowances may be required. See Note 17 for the carrying amount of trade and other receivables.

Retirement benefit obligation

Teagasc has an obligation to pay retirement benefits to certain employees. The cost of these benefits and the present value of the obligation depend on a number of factors, including; life expectancy, salary increases, asset valuations and the discount rate on corporate bonds. Management estimates these factors in determining the net retirement benefit obligation in the Statement of Financial Position. The assumptions reflect historical experience and current trends. See Note 10 for the disclosures relating to the retirement benefit scheme.

Provisions

The Group makes provisions for legal and constructive obligations, which it knows to be outstanding at the year-end date. These provisions are generally made based on historical or other pertinent information, adjusted for recent trends where relevant. However, they are estimates of the financial costs of events that may not occur for some years. As a result of this and the level of uncertainty attaching to the financial outcomes, the actual outcome may differ significantly from that estimated.

NOTES TO THE FINANCIAL STATEMENTS**4. Oireachtas grants**

		2022	2021
	Subhead	€'000	€'000
Vote 30: Agriculture, Food and the Marine Grant-in-aid for general expenses	C.5	138,504	131,490
Grant for human resource purposes	C.5	10,500	10,500
Food research and agriculture research	C.3	5,007	4,309
Agricultural and equine simulators	C.3.5	1,426	-
Agricultural catchments programme	B.3	2,570	2,500
Knowledge transfer programme	B.7	-	9
National Prepared Consumer Foods centre	C.4	554	436
National carbon observatory	C.10	2,178	1,939
Grant for forestry publicity and awareness and training	B.10	670	617
Grant for forestry education	B.10	37	39
Carbon tax measures	B.13	-	28
Retirement Benefit Funding			
Net deferred funding for retirement benefits		2,535	(6,775)
ASC remitted to Vote 30		(2,901)	(2,638)
Single public sector pension scheme remitted to DPER		(1,274)	(1,056)
		<u>159,805</u>	<u>141,398</u>

A grant without any performance criteria is recognised in income when the grant proceeds are received. Oireachtas grants received which impose specified future performance conditions are recognised in income when those conditions have been met. Oireachtas grants, received before income recognition is satisfied, are recorded as separate liabilities in the Statement of Financial Position. At year end, Teagasc had unfilled conditions included in the Statement of Financial Position as liabilities with respect to the following:

		2022	2021
	Note	€'000	€'000
Food research and agriculture research	21	6,217	5,413
National carbon observatory	21	680	3,041
National Prepared Consumer Foods centre	21	1,029	1,582
		<u>7,926</u>	<u>10,036</u>

5. EU funding

	2022	2021
	€'000	€'000
Farm Survey Income	148	156
INTERREG	301	155
Marie Curie	116	164
Horizon 2020	4,240	3,726
Horizon Europe	57	-
Other EU Income	301	164
	<u>5,163</u>	<u>4,365</u>

Horizon 2020, which commenced in 2015, ran to the end of 2020 and was the main financial tool through which the European Union supports research and development activities covering almost all scientific disciplines. Horizon Europe commenced in 2021 replacing Horizon 2020.

NOTES TO THE FINANCIAL STATEMENTS

5. EU funding (continued)

A grant without any performance criteria is recognised in income when the grant proceeds are received. EU grants received which impose specified future performance conditions are recognised in income when those conditions have been met. EU grants, received before income recognition is satisfied, are recorded as separate liabilities in the Statement of Financial Position. At year end, Teagasc had unfilled conditions included in the Statement of Financial Position as liabilities with respect to the following:

	Note	2022 €'000	2021 €'000
Horizon 2020		7,385	8,440
Horizon Europe		4,941	-
Marie Curie		155	155
Other EU Income		619	710
	21	<u>13,100</u>	<u>9,305</u>

6. Operational income

	Operations €'000	Knowledge Transfer €'000	Research €'000	2022 €'000	2021 €'000
Advisory service fees	-	15,744	60	15,804	11,140
Course fee income	25	5,167	416	5,608	5,356
El/ SFI and other state agencies research	-	1,011	10,789	11,800	8,608
Collaborative/ co-funding industry research	-	-	4,103	4,103	3,656
Other fees	95	960	3,234	4,289	4,398
Other farming operations	-	1,587	3,783	5,370	3,760
Publications and miscellaneous	-	1,059	899	1,958	732
	<u>120</u>	<u>25,528</u>	<u>23,284</u>	<u>48,932</u>	<u>37,650</u>

A grant without any performance criteria is recognised in income when the grant proceeds are received. State agency grants received which impose specified future performance conditions are recognised in income when those conditions have been met. State agency grants, received before income recognition is satisfied, are recorded as separate liabilities in the Statement of Financial Position. At year end, Teagasc had unfilled conditions included in the Statement of Financial Position as liabilities with respect to the following:

	Note	2022 €'000	2021 €'000
Science Foundation Ireland	21	11,204	10,154
Enterprise Ireland	21	<u>2,521</u>	<u>4,250</u>
		<u>13,725</u>	<u>14,404</u>

NOTES TO THE FINANCIAL STATEMENTS**7. Expenditure**

	Operations	Knowledge Transfer	Research	2022	2021
	€'000	€'000	€'000	€'000	€'000
Pay (Note 9)	7,703	37,866	48,470	94,039	87,260
Travelling and subsistence	218	2,189	2,507	4,914	2,069
General operating expenses (Note 8)	11,405	12,561	26,510	50,478	41,329
Financial charges	282	128	11	421	407
Depreciation (Note 12)	379	1,834	7,851	10,064	8,894
Grants to private colleges (Note 28)	-	3,203	-	3,203	2,922
Student grants	-	495	14	509	471
Cost of livestock purchases	-	62	754	816	744
Cost of research and development services	-	-	237	237	142
Walsh scholarship grants	-	623	5,145	5,768	6,075
Other grants	329	-	126	455	632
	<u>20,316</u>	<u>58,963</u>	<u>91,626</u>	<u>170,904</u>	<u>150,945</u>
Staff training				834	509
Retirement benefits (Note 10)				43,888	33,215
				<u>215,626</u>	<u>184,669</u>

In 2022 151 (2021: 141) staff received overtime payments. The highest aggregate amount paid to an individual was €28,393 (2021: €20,701).

NOTES TO THE FINANCIAL STATEMENTS

8. Analysis of general operating expenses

	Operations	Knowledge Transfer	Research	2022	2021
	€'000	€'000	€'000	€'000	€'000
Farming supplies/ services	-	1,520	6,186	7,706	6,023
Maintenance/ repairs	2,183	3,175	6,082	11,440	9,548
Rents/ rates/ insurances	1,212	506	1,093	2,811	2,652
Postage/ telephones	638	1,062	325	2,025	1,867
Power/ fuel/ petrol	240	1,017	3,098	4,355	2,611
Laboratory supplies	-	-	4,609	4,609	3,596
Printing/ stationery/ publicity	750	1,448	1,053	3,251	2,595
Seminar/ classroom/ library supplies	69	1,419	1,023	2,511	2,070
Services of external agencies	1,142	1,013	1,008	3,163	2,913
Student and staff canteen supplies	91	735	386	1,212	391
Audit fee	81	-	16	97	92
ICT supplies/ services	4,285	201	459	4,945	4,933
Legal/ professional fees	483	357	720	1,560	1,651
Miscellaneous programme costs	191	88	405	684	305
Special events and miscellaneous	42	19	48	109	82
	<u>11,405</u>	<u>12,561</u>	<u>26,510</u>	<u>50,478</u>	<u>41,329</u>

9. Staff

The average number of staff employed by Teagasc during the year was as follows:

	2022	2021
Professional	856	819
Technical	154	159
Administrative/ clerical	242	236
Farm/ domestic	108	108
	<u>1,360</u>	<u>1,322</u>

Additional superannuation contributions of €2,901,205 (2021: €2,638,438) were deducted from salaries and paid to the Department of Agriculture, Food and the Marine. Effective from 1 January 2019, members of public service defined benefit pension schemes pay an additional superannuation contribution (ASC) arising from the Public Service Stability Agreement (2018 - 2020) and the Public Service Pay and Pensions Act 2017.

NOTES TO THE FINANCIAL STATEMENTS**9. Staff (continued)****Employee short-term benefits breakdown**

Employees' short-term benefits in excess of €60,000 are categorised into the following bands:

Employee benefits	Teagasc Number of employees
€60,000 to €69,999	133
€70,000 to €79,999	173
€80,000 to €89,999	107
€90,000 to €99,999	20
€100,000 to €109,999	41
€110,000 to €119,999	32
€120,000 to €129,999	20
€130,000 to €139,999	-
€140,000 to €149,999	-
€150,000 to €159,999	3
€160,000 to €169,999	-
€170,000 to €179,999	1

Note: For the purposes of this disclosure, short-term employee benefits in relation to services rendered during the reporting period include salary, overtime, allowances and other payments made on behalf of the employee, but exclude employer's PRSI.

Aggregate employee benefits

	2022 €'000	2021 €'000
Staff short-term benefits	85,186	77,083
Termination benefits	-	-
Retirement benefit costs	43,888	33,215
Employer's contribution to social welfare	7,775	7,134
	<u>136,849</u>	<u>117,432</u>

The total number of staff employed (WTE) at year end was 1,400 (2021: 1,330). There were no termination benefits in 2022 (2021: nil).

Staff short-term benefits

	2022 €'000	2021 €'000
Basic pay	81,428	73,780
Overtime	1,132	1,013
Allowances	2,626	2,290
	<u>85,186</u>	<u>77,083</u>

NOTES TO THE FINANCIAL STATEMENTS

9. Staff (continued)

Key management personnel

Key management personnel in Teagasc consist of the members of the Authority, the Director and three divisional directors reporting to the Director. The total value of employee benefits for key management personnel is set out below:

	2022	2021
	€'000	€'000
Salaries and other short term benefits:		
Key management remuneration	745	713
	<u>745</u>	<u>713</u>

This does not include the value of retirement benefits earned in the period. The key management personnel, except for those on the Authority, are members of the Teagasc pension scheme and their entitlements in that regard do not extend beyond the terms of the model public defined benefit superannuation scheme.

Director's salary and benefits

The Director's remuneration for the financial period was as follows:

	2022	2021
	€'000	€'000
Basic pay	178	170
Total remuneration	<u>178</u>	<u>170</u>

The Director is a member of the Teagasc pension scheme and his entitlements in that regard do not extend beyond the model public sector defined benefit superannuation scheme. The value of retirement benefits earned in the period is not included above.

10. Retirement benefit plans

Section 9 of the Agriculture (Research, Training and Advice) Act, 1988 provides for the establishment of schemes for the granting of retirement benefits in respect of staff appointed by Teagasc and staff transferred to Teagasc from An Chomhairle Oiliúna Talmhaíochta and from An Foras Talúntais.

Pending the approval of draft pension schemes by the Minister for Agriculture, Food and the Marine, the Minister for Finance and the Oireachtas, Teagasc operates pension schemes on an administrative basis. At 31 December 2022 this approval remained outstanding.

Teagasc also administers two pension schemes (the Agricultural Colleges Staff Pension Scheme 1985 and the Agricultural Colleges Spouses' and Children's Contributory Pension Scheme 1985) in respect of certain staff employed by privately owned Colleges of Agriculture and Horticulture, the cost of whose salaries is borne by the exchequer through the agency of Teagasc.

The above schemes are defined benefit pension schemes. No separate fund is maintained and no assets are held to finance the payment of retirement benefits and gratuities. The actuarial estimate of future liabilities accruing in regard to future benefits is shown on the Statement of Financial Position.

NOTES TO THE FINANCIAL STATEMENTS**10. Retirement benefit plans (continued)**

The average number of monthly retirement benefits paid during the year was 1,745 (2021: 1,751).

i. Analysis of total retirement benefit costs charged to income and expenditure account

	2022	2021
	€'000	€'000
Current service cost	31,690	28,437
Interest on scheme liabilities	19,492	11,436
Staff contributions	(4,393)	(4,020)
Additional Superannuation contributions	(2,901)	(2,638)
	<u>43,888</u>	<u>33,215</u>

ii. Movement in net retirement benefit liability during the financial year

	2022	2021
	€'000	€'000
Net retirement benefit liability at 01 January	1,414,380	1,366,697
Current service cost	31,690	28,437
Benefits paid	(48,647)	(46,648)
Interest on scheme liabilities	19,492	11,436
Actuarial (gain)/ loss	(458,987)	54,458
Net retirement benefit liability at 31 December	<u>957,928</u>	<u>1,414,380</u>

iii. Deferred funding asset for retirement benefits

Teagasc recognises as an asset an amount corresponding to the unfunded deferred liability for retirement benefits on the basis of the set of assumptions described below and a number of past events. These events include the statutory basis for the establishment of the pension schemes, and the policy and practice currently in place in relation to funding public service pensions including contributions by employees and the annual estimates process. While there is no formal agreement regarding these specific amounts with the Department of Agriculture, Food and the Marine, Teagasc has no evidence that this funding policy will not continue to meet such sums in accordance with current practice.

Net deferred funding for retirement benefits in the year

	2022	2021
	€'000	€'000
Funding recoverable in respect of current years retirement benefits	51,182	39,873
Resources applied to pay retirement benefits	(48,647)	(46,648)
	<u>2,535</u>	<u>(6,775)</u>

The deferred funding asset for retirement benefits as at 31 December 2022 was €957m (2021: €1,414m).

NOTES TO THE FINANCIAL STATEMENTS

10. Retirement benefit plans (continued)

iv. History of defined benefit obligations

	2022	2021	2020	2019
	€'000	€'000	€'000	€'000
Experience (loss)	(14,690)	-	(59,697)	(18,834)
Percentage of present value of scheme liabilities	1.5%	0.0%	4.4%	1.4%
Changes in assumptions	473,677	(54,458)	(15,723)	(137,908)
Percentage of present value of scheme liabilities	49.4%	3.9%	1.2%	10.6%
Actuarial gain/ (loss) recognised in other comprehensive income	458,987	(54,458)	(75,420)	(156,742)

The cumulative actuarial gain recognised in the Statement of Comprehensive Income amounts to €148.458m (2021: €310.529m).

v. General description of the scheme

The pension schemes are defined benefit final salary pension arrangements with benefits and contributions defined by reference to current "model" public sector scheme regulations. The schemes provide a retirement benefit (one eightieth per year of service), a gratuity lump sum (three eightieths per year of service) and spouse's and children's retirement benefits. Retirement age for pre 01 April 2004 members will be compulsory on reaching age 70. These members also have an entitlement to retire without actuarial reduction from age 60. Public servants appointed on or after 01 April 2004 and pre 01 January 2013 have a minimum retirement age of 65. Retirement benefits in payment (and deferment) normally increase or decrease in line with general public sector salary inflation.

Teagasc operates the Single Public Service Retirement Benefits Scheme (Single Scheme) which is the defined benefit scheme for pensionable public servants appointed on or after 01 January 2013. The scheme is based on a career averaging model. Retirement for those entrants will be compulsory on reaching age 70.

The valuation used for disclosures has been based on an actuarial valuation by a qualified independent actuary on 13 January 2023 in order to assess the scheme liabilities at 31 December 2022.

The principal actuarial assumptions used to calculate liabilities are as follows:

	2022	2021
	% per annum	% per annum
Inflation rate	2.60	2.20
Salary rate	4.10	3.70
State pension	4.10	3.70
Pension rate – Main Scheme	3.35	2.95
Pension rate – Single Scheme	2.60	2.20
Scheme liabilities discount rate	4.15	1.40

NOTES TO THE FINANCIAL STATEMENTS**10. Retirement benefit plans (continued)**

The mortality basis adopted allows for improvements in life expectancy over time, so that life expectancy at retirement will depend on the year in which a member attains retirement age (age 65). The table below shows the life expectancy for members attaining age 65 in 2022 and 2042.

Year of attaining 65	2022	2042
Life expectancy - males	86.50	88.20
Life expectancy - females	89.10	90.60

On the basis of these and other assumptions and applying the projected unit method the present value of pension scheme liabilities is as follows:

	2022 €'000	2021 €'000
Total accrued retirement benefit liability	957,928	1,414,380

11. Tax on profit on ordinary activities

	2022 €'000	2021 €'000
Based on results for the year:		
Current tax charge	-	-
Deferred tax (Note 22)	(55)	(26)
	<u>(55)</u>	<u>(26)</u>
Provision in respect of prior years:		
Corporation tax	-	-
	<u>(55)</u>	<u>(26)</u>

The tax charge for the year is lower than the charge that would result from applying the standard rate of Irish corporation tax to the profit on ordinary activities. The differences are explained as follows:

	2022 €'000	2021 €'000
Profit/ (loss) on ordinary activities before taxation	804	1,987
Profit/ (loss) on ordinary activities multiplied by Standard rate of corporation tax in Ireland -12.5%	101	248
Effects of:		
Excess of capital allowances over depreciation	(36)	(25)
Higher tax rate on profits	4	3
Unutilised trading losses	92	51
Parent (profit)/ loss on ordinary activities multiplied by 12.5%	(160)	(277)
Current tax charge for the year	<u>-</u>	<u>-</u>

The tax charge arises in the operations of the subsidiary Moorepark Technology Limited.

NOTES TO THE FINANCIAL STATEMENTS

12. Property, plant and equipment

GROUP

	Land €'000	Buildings €'000	Assets under construction €'000	Plant and equipment €'000	Total €'000
Cost or valuation					
At 1 January 2021	6,137	158,607	12,720	100,470	277,934
Additions	567	3,297	2,848	10,059	16,771
Assets completed	-	8,773	(8,783)	10	-
Disposals	(7)	(2,041)	-	(598)	(2,646)
Reclassification	-	-	-	-	-
At 31 December 2021	6,697	168,636	6,785	109,941	292,059
Additions	-	2,564	2,723	12,492	17,779
Assets completed	-	679	(2,464)	1,785	-
Disposals	-	-	-	(665)	(665)
Reclassification	-	(78)	-	(64)	(142)
At 31 December 2022	6,697	171,801	7,044	123,489	309,031
Accumulated depreciation and impairment losses					
At 1 January 2021	-	71,206	60	78,215	149,481
Charge for year	-	4,148	-	4,746	8,894
Disposals	-	(1,803)	-	(568)	(2,371)
At 31 December 2021	-	73,551	60	82,393	156,004
Charge for year	-	4,294	-	5,769	10,063
Disposals	-	(35)	-	(676)	(711)
At 31 December 2022	-	77,810	60	87,486	165,356
Carrying value					
At 31 December 2022	6,697	93,991	6,984	36,003	143,675
At 31 December 2021	6,697	95,086	6,725	27,547	136,055

NOTES TO THE FINANCIAL STATEMENTS**12. Property, plant and equipment (continued)****TEAGASC**

	Land	Buildings	Assets under construction	Plant and equipment	Total
	€'000	€'000	€'000	€'000	€'000
Cost or valuation					
At 1 January 2021	6,137	146,115	11,047	94,049	257,348
Additions	567	3,228	2,748	9,515	16,058
Assets completed	-	8,773	(8,773)	-	-
Disposals	(7)	(1,982)	-	(543)	(2,532)
Reclassification	-	-	-	-	-
At 31 December 2021	6,697	156,134	5,022	103,021	270,874
Additions	-	2,553	2,685	12,117	17,355
Assets completed	-	679	(679)	-	-
Disposals	-	-	-	(665)	(665)
Reclassification	-	-	-	-	-
At 31 December 2022	6,697	159,367	7,027	114,474	287,564
Accumulated depreciation and impairment losses					
At 1 January 2021	-	67,393	60	73,560	141,013
Charge for year	-	3,736	-	4,451	8,187
Disposals	-	(1,760)	-	(519)	(2,279)
At 31 December 2021	-	69,369	60	77,492	146,921
Charge for year	-	3,881	-	5,349	9,230
Disposals	-	-	-	(616)	(616)
At 31 December 2022	-	73,250	60	82,225	155,535
Carrying value					
At 31 December 2022	6,697	86,116	6,967	32,249	132,029
At 31 December 2021	6,697	86,765	4,962	25,529	123,953

Certain fixed assets entrusted to Teagasc are protected by statute, and may not be sold.

Teagasc has 55 offices/ colleges/ centres of which 50 are owned by Teagasc and the remaining 5 are rented. Three of the rental agreements expire in less than one year, one between two and five years and the remaining agreement is a long term lease of greater than five years.

NOTES TO THE FINANCIAL STATEMENTS

12. Property, plant and equipment (continued)

Disposal of property, plant and equipment

	Proceeds/ costs	Proceeds/ costs
	2022	2021
	€'000	€'000
Proceeds from sale of property:		
Property sales during year	-	4,436
Transfer to exchequer	-	(3,436)
Cost of sales	-	(44)
	-	956
Proceeds from sale of other assets	53	111
	53	1,067
Net book value of fixed assets disposed:		
Property assets	-	(244)
Other assets	(97)	(30)
	(97)	(274)
(Loss)/ gain on disposal of fixed assets	(44)	793

There was a transfer of asset sales proceeds to the exchequer in 2021 of €3.436m.

Teagasc completed the sale of land and buildings in Kinsealy, Co. Dublin to the Department of Education and Science for €4.436m in 2021. The property was valued by the State Valuation Office in 2019 under Circular 11/15 – 'Protocols for the transfer and sharing of State Property Assets'. Sanction approving the sale was received from the Department of Agriculture, Food and the Marine in 2020, with the condition that €3.436m of the sale proceeds be transferred to the exchequer.

13. Heritage assets

Group and Teagasc

Period houses in Kildalton College, Ballyhaise College and Oak Park Research Centre are part of the working infrastructure of Teagasc, and are as such capitalised on the Statement of Financial Position at original cost.

Certain heritage assets at Johnstown Castle Research Centre, including the castle, agricultural museum and walled garden were not originally recognised in the Statement of Financial Position as information on the cost or value of these heritage assets could not be obtained at a cost which was commensurate with the benefits to users of the financial statements. These assets were subsequently developed as a tourist and heritage attraction. The development project involved renovation of the castle and construction of a visitor centre which became operational in 2019. The centre is managed and operated by Irish Heritage Trust. All construction costs have been capitalised and are depreciated in line with Teagasc's property, plant and equipment accounting policy.

NOTES TO THE FINANCIAL STATEMENTS

14. Investments

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Investment in quoted shares	379	405	379	405
Investment in unquoted shares	268	271	269	272
	<u>647</u>	<u>676</u>	<u>648</u>	<u>677</u>

Investments in quoted shares

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Fair value at 1 January	405	354	405	354
(Loss)/ gain on fair value movement in the year	(26)	51	(26)	51
Fair value at 31 December	<u>379</u>	<u>405</u>	<u>379</u>	<u>405</u>

Investments in unquoted shares

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Value at acquisition date				
At 1 January	271	244	272	245
Additions	-	1	-	1
Revolving fund	(3)	16	(3)	16
Gain on fair value movement in the year	-	10	-	10
At 31 December	<u>268</u>	<u>271</u>	<u>269</u>	<u>272</u>

Net book value

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
At 1 January	271	244	272	245
Movement in unquoted shares	(3)	27	(3)	27
At 31 December	<u>268</u>	<u>271</u>	<u>269</u>	<u>272</u>

NOTES TO THE FINANCIAL STATEMENTS

14. Investments (continued)

Analysed as:

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Glanbia plc	335	346	335	346
Kerry Group plc	44	59	44	59
Moorepark Technology Limited	-	-	1	1
Wexford Milk Producers Limited	1	1	1	1
Lakeland Dairies	10	10	10	10
Aurivo	2	2	2	2
Tirlán Co-Op Ltd	14	14	14	14
Carbery Creameries Ltd	89	89	89	89
Barryroe Creameries Ltd	4	4	4	4
Dairygold Co-Op Society Ltd	69	69	69	69
Dairygold Co-Op Society (Revolving fund)	79	82	79	82
	647	676	648	677

Details of investments:

Company name	Country of incorporation	Registered number	Number of shares	Nominal value per share at 31.12.2022	Dividend received	Nature of business of company
Glanbia plc	Ireland	129933	28,119	€11.92	2022 - €4,129 2021 - €3,659	Global nutrition company
Kerry Group plc	Ireland	111471	522	€84.24	2022 - €512 2021 - €465	Provider of taste and nutrition technologies
Moorepark Technology Ltd	Ireland	168270	5,102	€0.13	2022 - €nil 2021 - €nil	Provision of services for R&D
Wexford Milk Producers Ltd	Ireland	2640R	767	€1.00	2022 - €nil 2021 - €nil	Milk production and supply
Lakeland Dairies Co-Operative Society Ltd	Ireland	4622R	10,438	€1.00	2022 - €104 2021 - €489	Milk production and supply
Aurivo Co-Operative Society Ltd	Ireland	5113R	1,715	€1.00	2022 - €34 2021 - €34	Milk production and supply
Tirlán Co-Operative Ltd	Ireland	4928R	13,742	€1.00	2022 - €1,165 2021 - €1,110	Milk production and supply
Kerry Co-Operative Ltd	Ireland	3618R	87	€1.25	2022 - €nil 2021 - €nil	Milk production and supply
Carbery Creameries Ltd	Ireland	2899R	19,605	€4.37	2022 - €nil 2021 - €nil	Milk production and supply
Carbery Creameries Ltd	Ireland	2899R	3,698	€1.00	2022 - €nil 2021 - €nil	Milk production and supply
Barryroe Co-Operative Ltd	Ireland	1736R	4,227	€1.00	2022 - €nil 2021 - €nil	Milk production and supply
Dairygold Co-Operative Society Ltd	Ireland	4621R	69,433	€1.00	2022 - €nil 2021 - €nil	Milk production and supply

NOTES TO THE FINANCIAL STATEMENTS

14. Investments (continued)

Teagasc has invested €650 in Moorepark Technology Limited and has a 57% holding in the paid up share capital of the company.

The percentage shareholding in all of the other organisations listed is negligible and does not give Teagasc a controlling interest.

15. Inventories

	2022	2021
	€'000	€'000
Livestock	6,059	5,827
Farm produce, fertilisers and feeding stocks	1,064	733
General supplies	300	216
	<u>7,423</u>	<u>6,776</u>

Stocks are stated after provision for impairment of €nil (2021: €nil).

Reconciliation of movements in livestock:

	2022	2021
	€'000	€'000
Balance at start of year	5,827	4,775
Purchases	816	745
Sales	(3,883)	(3,037)
Births	1,213	1,206
Deaths	(169)	(137)
Fair value adjustments	2,255	2,275
Balance at end of year	<u>6,059</u>	<u>5,827</u>

16. Assets held for sale

At 31 December 2022, Teagasc did not have any assets held for sale. Lands at Kinsealy East, Co. Dublin, which had been held for sale in the previous year, have been identified for acquisition by the Land Development Agency and withdrawn from the market.

NOTES TO THE FINANCIAL STATEMENTS

17. Receivables

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Trade receivables	9,935	7,804	8,932	7,282
Other receivables	200	220	140	197
Accrued operational income	14,487	10,640	14,487	10,640
Accrued Oireachtas grant income	6,104	5,026	6,104	5,026
Prepayments	2,775	2,183	2,752	2,152
VAT and other taxes	-	-	-	-
	<u>33,501</u>	<u>25,873</u>	<u>32,415</u>	<u>25,297</u>

All amounts included above fall due within one year.

Trade receivables are stated after provision for impairment of €138,888 (2021: €142,138).

18. Cash and cash equivalents

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Cash at bank and in hand	25,486	30,728	23,195	28,177
Short-term deposits	20,387	20,434	20,387	20,434
	<u>45,873</u>	<u>51,162</u>	<u>43,582</u>	<u>48,611</u>

NOTES TO THE FINANCIAL STATEMENTS

19. Payables – amounts falling due within one year

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Trade payables	431	763	450	753
Other payables and accruals	16,399	17,258	15,269	16,316
Legal provisions	262	237	262	237
PAYE/ PRSI	3,006	2,777	2,979	2,746
Value added tax	1,607	551	1,604	543
Withholding tax/ RCT	247	232	247	232
Other payroll deductions	954	923	953	923
	<u>22,906</u>	<u>22,741</u>	<u>21,764</u>	<u>21,750</u>
Payables for taxation and social welfare included above	<u>4,859</u>	<u>3,560</u>	<u>4,829</u>	<u>3,521</u>

Included in Teagasc's other payables and accruals of €15.269m are: wages, salaries and other payroll related costs €3.39m (including an annual leave accrual of €2.08m), repairs and maintenance costs €2.85m, equipment and capital items €2.83m, professional fees including legal and analytical services €1.56m, general operating costs including utilities €1.33m, farm running costs €1.10m, ICT costs €0.66m, grants/ seminars €0.59m, other accruals €0.41m, public relations and advertising €0.28m, and travel and subsistence €0.26m.

The payment of trade payables varies between on demand and thirty days. Prompt payment interest and compensation of €32,616 was payable on trade payables in 2022 (2021: €35,798).

PAYE/ PRSI, value added tax and withholding tax are subject to terms of relevant legislation. Interest accrues on late payment of taxes in line with the terms of relevant legislation. No interest was due at the end of the financial year for late payment of taxes.

Other amounts included within payables not covered by specific note disclosures are unsecured, interest free and repayable on demand.

20. Payables – amounts falling due after more than one year

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Other payables and accruals	<u>406</u>	<u>406</u>	<u>-</u>	<u>-</u>
	<u>406</u>	<u>406</u>	<u>-</u>	<u>-</u>

NOTES TO THE FINANCIAL STATEMENTS

21. Deferred income

Teagasc carries out public funded research in collaboration with partner research performing organisations in accordance with contracts with other State Institutions, principally the Department of Agriculture, Food and the Marine. Grants in respect of such research are taken into account as income when the corresponding expenditure has been incurred under each contract. Teagasc makes payments to partners when advance grant income received by Teagasc is due to collaborating partner research organisations. Those advances are deferred until payments are made to the partner organisations. At 31 December 2022 the source and amount of deferred income in respect of research and other projects was as follows:

Grant/ other deferrals	Government Funding Department	Note	Opening Deferred €'000	Cash Received €'000	Taken to income €'000	Third party payments €'000	Deferred within 1 year €'000	Deferred > 1 year €'000
Agricultural Catchments Programme	Dept of Agriculture, Food and the Marine		-	2,634	2,570	-	64	-
Food research and agriculture research	Dept of Agriculture, Food and the Marine		5,413	4,862	4,055	3	3,567	2,650
Era Net	Dept of Agriculture, Food and the Marine		79	158	98	-	103	36
Marine Institute	Dept of Agriculture, Food and the Marine		-	93	63	-	30	-
National Carbon Observatory	Dept of Agriculture, Food and the Marine		3,041	-	2,361	-	381	299
National Prepared Consumer Foods Centre	Dept of Agriculture, Food and the Marine		1,583	-	554	-	1,029	-
US Ireland	Dept of Agriculture, Food and the Marine		19	143	128	-	2	32
Sub total			10,135	7,890	9,829	3	5,176	3,017

NOTES TO THE FINANCIAL STATEMENTS

21. Deferred income (continued)

Grant/ other deferrals	Government Funding Department	Note	Opening Deferred €'000	Cash Received €'000	Taken to income €'000	Third party payments €'000	Deferred within 1 year €'000	Deferred > 1 year €'000
Sub total			10,135	7,890	9,829	3	5,176	3,017
Enterprise Ireland	Dept of Enterprise, Trade and Employment		4,251	2,668	3,305	1,092	2,218	304
Science Foundation Ireland	Dept of Enterprise, Trade and Employment		10,154	10,535	6,442	3,042	8,415	2,790
Environmental Protection Agency	Dept of Environment, Climate and Communications		144	358	236	25	48	193
Health & Safety Authority	Dept of Enterprise, Trade and Employment		21	-	-	-	21	-
Irish Aid	Dept of Foreign Affairs		647	901	196	735	507	110
Sustainable Energy Authority of Ireland	Dept of Environment, Climate and Communications		142	-	67	-	75	-
European Union			9,304	13,769	3,687	6,286	6,908	6,192
General research and other deferrals			3,015	1,103	230	37	3,800	51
Course and accommodation fees			2,691	1,425	1,900	-	1,672	544
Group total			<u>40,504</u>	<u>38,649</u>	<u>25,892</u>	<u>11,220</u>	<u>28,840</u>	<u>13,201</u>
Teagasc			<u>40,258</u>	<u>38,372</u>	<u>25,738</u>	<u>11,220</u>	<u>28,471</u>	<u>13,201</u>

NOTES TO THE FINANCIAL STATEMENTS**22. Provision for liabilities**

Deferred tax	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
At beginning of year	37	63	-	-
Charged to income and expenditure account	(54)	(26)	-	-
At end of year	(17)	37	-	-

Components of deferred taxation	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Unutilised trading losses	(249)	(163)	-	-
Accelerated capital allowance	232	200	-	-
	(17)	37	-	-

23. Capital Account

The balance on this account of €132.029m (2021: €123.953m) represents the unamortised value of funds used to purchase property, plant and equipment, increasing by €8.076m in 2022 (2021: €7.618m).

24. Revenue reserves

The revenue reserves represent cumulative comprehensive income recognised as at the reporting date.

25. Non-controlling interest

The non-controlling interest comprises the other shareholders' equity investment together with their capital contribution to expand facilities in Moorepark Technology Limited.

26. Leases*Operating leases*

At 31 December Teagasc had future minimum lease payments under non-cancellable operating leases as follows:

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Leases which expire:				
Within one year	654	645	654	645
Between two and five years	1,150	664	1,150	664
After five years	1,679	941	1,679	941
	3,483	2,250	3,483	2,250

NOTES TO THE FINANCIAL STATEMENTS

27. Reconciliation of surplus to cash flow from operating activities

	2022	2021
	€'000	€'000
Surplus for the year before taxation	804	1,987
Depreciation expense	10,063	8,894
Fair value adjustments on biological assets	(2,255)	(2,275)
Fair value adjustments on investments	29	(77)
Loss/ (gain) on disposal of tangible fixed assets	44	(793)
Interest paid	121	183
Interest income	(2)	(1)
Transfer to capital account	8,076	7,618
Total operating cash flows before movements in working capital	16,880	15,536
Decrease in inventory	1,608	1,150
(Increase) in receivables	(7,628)	(1,250)
Increase in payables	1,696	8,271
Cash flow from operating activities	12,556	23,707

28. Private colleges

Teagasc provides support to three privately owned agricultural colleges, Gurteen Agricultural College, Mountbellew Agricultural College and Salesian Agricultural College Pallaskenry, as follows:

	2022	2021
	€'000	€'000
Grants to private colleges	3,203	2,922
Salary costs of staff seconded to private colleges (included in the total pay expenditure in Note 7 above)	372	393
External service provider costs for teaching services provided to private colleges (included in the general operating expenditure in Note 8 above)	159	178
	3,734	3,493

In addition to grants outlined above Teagasc provided workbooks to private colleges to the value of €61,000 (2021: €58,600). Income of €547,775 (2021: €576,476) was received from private colleges for course resources provided by Teagasc and the agreed share of Rural Development Programme course learner fees.

29. Commitments

Capital commitments

Teagasc had capital commitments outstanding at 31 December 2022 amounting to €4.344m which relate to construction of buildings and facilities at Moorepark €3.118m, Kildalton College €0.366m, Johnstown Castle €0.299m, Ballyhaise €0.246m, Oak Park €0.160m and Grange €0.154m (2021: €1.505m).

Grant commitments

Teagasc had grant commitments outstanding at 31 December 2022 amounting to €9.860m which relate to Walsh scholars €5.695m, private colleges €3.190m and other grants €0.976m (2021: €9.929m).

NOTES TO THE FINANCIAL STATEMENTS

30. Authority members – disclosure of transactions

The Authority has adopted procedures in accordance with the guidelines issued in 2016 by the Department of Public Expenditure and Reform in relation to the disclosure of interest by Authority members and the Authority has adhered to these procedures. There were no transactions in the year in relation to the Authority's activities in which the Authority members were involved.

31. Contingent liabilities

The Authority has made provision in the financial statements reflecting its best estimate of the liability arising. The Authority is of the view that there are no contingent liabilities.

32. Related party transactions

The following transactions were carried out with related parties:

Sales of goods and services:

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Subsidiary	-	-	6	9
	-	-	6	9

Purchases of goods and services:

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Subsidiary	-	-	906	791
	-	-	906	791

Payable to related parties:

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Subsidiary	117	118	117	118
	117	118	117	118

The receivables and payables arise from sales and purchase transactions, respectively. The receivables and payables are unsecured in nature and bear no interest. No provisions are held against receivables from related parties during the year (2021: €nil).

Under the terms of the Moorepark Technology Promoter's Agreement, Teagasc has undertaken to provide from its own resources specified staff requirements to include the general manager, the company secretary and a technician.

NOTES TO THE FINANCIAL STATEMENTS

33. Financial instruments

The Group and Teagasc have the following financial instruments:

	Group		Teagasc	
	2022	2021	2022	2021
	€'000	€'000	€'000	€'000
Financial assets that are equity instruments measured at fair value through consolidated statement of income and expenditure				
Listed non-current asset investments	379	405	379	405
Unlisted non-current asset investments	268	271	269	272
Financial assets				
Trade receivables	9,935	7,804	8,932	7,282
Other receivables	200	220	140	197
Cash in hand (including short-term deposits)	45,873	51,162	43,582	48,611
Financial liabilities measured at amortised cost				
Trade payables	431	763	450	753
Other payables	16,399	17,256	15,269	16,316

34. Events after the reporting period

There have been no significant events, outside the ordinary course of business, affecting the Group since 31 December 2022.

35. Approval of the financial statements

The Authority approved the financial statements on 01/03/2023.

