



Rialtas na hÉireann
Government of Ireland

Food Vision 2030

A World Leader in
Sustainable Food Systems



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FOREWORD

The 2020s should be the Sustainability Decade for the Irish agri-food sector. After eighteen months of work, this is the conclusion of the 2030 Agri-Food Strategy Committee. The Strategy that follows explains why this conclusion was reached and what needs to be done for Ireland to become an international leader in Sustainable Food Systems (SFSs).

A Sustainable Food System is profitable throughout (economic sustainability), has broad-based benefits for society (social sustainability) and has a positive or neutral impact on the natural environment (environmental sustainability).

The Stakeholder Committee's terms of reference were to develop a new Strategy for the Irish agri-food sector that would outline the vision and key objectives, with associated actions, to ensure its economic, environmental and social sustainability to 2030. It took a crucial early decision that the Strategy should be developed using a 'food systems' approach. This recognises the interconnectedness between policies for food, environment and health; and acknowledges that each actor in the food chain, from farm to fork, has an important role in developing a sustainable food system. Adopting this approach represents a significant change in direction by comparison to the four previous agri-food strategies developed since 2000, albeit acknowledging important continuities with these earlier strategies.

The key to leadership in Sustainable Food Systems is to achieve a genuine balance between the three dimensions of sustainability. At the heart of the

Strategy are four high level Missions underpinned by a series of key goals and actions, which seek to strike this balance:

1. A climate smart, environmentally sustainable agri-food sector;
2. Viable and resilient primary producers with enhanced wellbeing;
3. Food which is safe, nutritious and appealing: Trusted and valued at home and abroad;
4. An innovative, competitive and resilient agri-food sector, driven by technology and talent.

We anticipate that the market and policy environment facing the agri-food sector over the next decade will be substantially different than for any recent decade. As our work progressed, the message we received, with ever greater clarity, was that sustainability will be the requirement from the domestic and international consumer and citizen, and the trade customers representing the bridge between the consumer and the agri-food sector. Just as importantly, it will also be key to ensuring that the sector operates within planetary boundaries and fulfils what Irish society expects from it

in terms of becoming more sustainable.

We believe that the changing world market represents a significant opportunity for an Ireland producing sustainable food and drink, as well as other natural resource based products and services associated with the sector. Most of the growth in population over the next 30 years will take place in Asia and Africa, with growing middle class populations with the capacity to pay for more diversified and higher quality diets.

In addition to how the market shaped the strategy, we have taken account of changing political and policy developments. The European Green Deal (EGD), including the Farm to Fork (F2F) and Biodiversity Strategies, represent a fundamental shift in EU policy direction. The final agreement on the CAP in June 2021, and the CAP Strategic Plans to give effect to this agreement, will require significant decisions at national level, decisions we would expect will be influenced by the policy principles set out in this Strategy, which has been developed to align with these significant new policies.

Irish policy on the environment and climate change has become significantly more ambitious in recent years. The 2021 Climate Action Bill will set targets for the

whole economy and, through the allocation of five-year carbon budgets, for different economic sectors, including agriculture.

The Strategy has set the objective of achieving a carbon-neutral food system by 2050, with verifiable progress by 2030, encompassing emissions, water quality and biodiversity. It builds on Ag Climatise (December 2020), the roadmap for delivering the emissions targets for agriculture in the Government's 2019 Climate Action Plan. Ag Climatise will require further adjustment to take on board evolving national and international policies.

The other strands of policy to achieve the sector's climate neutrality objective are measures to increase its role in carbon sequestration, especially through forestry, and the scale-up of renewable energy sources, through anaerobic digestion, solar energy and greater energy efficiency. The coming decade will see carbon farming offering a potential new source of income for farmers, which will require a new regulatory framework at EU and national level, and payment for the delivery of other eco-system services.

An urgent action in the Strategy is to produce detailed plans by Q2 2022 to manage the sustainable environmental footprint of the dairy and the beef sectors. Ag Climatise makes clear that any increase in biogenic methane emissions from increased livestock numbers will jeopardise the achievement of the sector attaining carbon neutrality by 2050. This issue is the subject of strongly opposing views, and will need



further detailed examination in order to make an informed policy choice.

In my view, the debate between agricultural and environmental interest groups has become excessively polarised in Ireland. In February 2021, the Environmental Pillar representative withdrew from the 2030 Stakeholder Committee, stating their view that the Pillar's recommendations were insufficiently reflected in the draft. This withdrawal was a matter of regret to the Committee, all the more so given the valuable contribution the representative had made up to that point. The Strategy in its final form has, in the view of the Committee, recommended policies to achieve a balance between economic, environmental and social dimensions of sustainability. The Strategy takes a systematic and comprehensive approach to dealing with the range of environmental challenges facing the sector, spelling out a vision of how it can make an important contribution to Ireland achieving its climate and environmental targets, through a dynamic combination of urgent short-term action to tackle existing problems of emissions, water quality and biodiversity within a longer term vision to achieve 2030 targets; increased carbon sequestration including forestry; and a scale-up of on-farm renewable energy sources. It includes many of the suggestions put forward by the Environmental Pillar. It is in Ireland's interest that the Strategy can attract a wide level of political and societal consensus: this will be the best basis for ensuring its implementation and for it to be recognised as a truly national policy.

I believe that the final Strategy provides a basis for a renewed dialogue involving the representatives of the Environmental Pillar towards finding sufficient common ground on which to work together towards an agreed vision for the future.

The Strategy puts more emphasis than its predecessors on the critically important role of the primary producer. Mission 2 spells out the goals and actions aimed at increasing the economic and social viability of primary producers. The Strategy envisages an upward trend in Family Farm Income towards 2030, with an increased share of viable and sustainable farms and an upward trend in primary output value with increased diversification across sectors.

It signals policies to make the sector more diversified, resilient, and based on circular economy principles, including targets for reducing food waste. It proposes expansion in nature-based production systems, tillage, horticulture and organic production. But the core of Ireland's agri-food output should continue to be grass-based livestock production. Worldwide, but particularly in high-income countries, more fruits and vegetables and less ultra-processed foods should be consumed in the interest of public health. But this does not mean that Ireland should make radical changes from its role as a producer and exporter of safe, high quality and sustainably produced livestock products: this would not make sense from a global environmental or nutrition perspective, nor an economic perspective.

The 2020s will present two major challenges in

addition to the shifting market and policy environment – the outworking of Brexit and building back after the COVID pandemic. The UK will continue to be Ireland's largest market for food and drink. The UK government has commenced signing trade agreements with third countries and the impact of these agreements will be to make the British market for food and drink more competitive, particularly during the second half of the decade. The Strategy recognises that the fisheries and seafood sector faces particular challenges arising from the outcome of the final Brexit negotiations and acknowledges the work of the Seafood Sector Task Force established to provide recommendations on the appropriate measures that will best support the sector and local coastal communities. The Strategy's emphasis on policies for social sustainability and the need for greater investment in community –based development within the framework of enhanced regional and rural development policy will be an important part of the response to COVID.

The 2030 Strategy represents a continuation of the journey of transition the sector has experienced over the past seventy years. In the 1950s, Ireland's agriculture operated at subsistence levels. Membership of the EEC from 1973 onwards supported the modernisation of the sector and the evolving nature of the CAP led to the development of today's internationally competitive agri-food sector.

The commitment in this Strategy that Ireland should become an international leader in sustainable food systems represents a particularly important transition

moment. This Strategy may be for the 2020s but, in all likelihood, it will provide the foundation stones upon which the strategies for subsequent decades will be built. The best guarantee for the realisation of this longer term vision is that sustainable food systems deliver benefits: to society as a whole with a healthier population, environment and economy; with the market rewarding primary producers with higher prices for certain products; and with society being willing to pay farmers and fishers for a range of eco-system services.

While the primary purpose of this Strategy is to provide a vision and policies for the Irish agri-food sector over the coming decade, it has an important international dimension. Ireland is one of very few countries to have developed an agri-food strategy using a food systems approach. The timing for this is opportune. In September 2021, the UN Food Systems Summit will take place, with Ireland represented by Taoiseach Micheál Martin and Minister Charlie McConalogue. The Summit will lead to a greater focus on sustainable food systems, at international level and within the national policies in many countries. Through its experience of developing its own agri-food strategy and the political commitment to attain the highest standards of sustainability within its domestic policy, Ireland will be in a strong position to play a leadership role in the increasingly substantial debate at international level on sustainable food systems. I have every confidence it will do so.

I want to conclude with some thanks. Sean Bell, Karl Walsh and Wila Bruce represented the

DAFM secretariat who drafted the Strategy. They demonstrated an enormous capacity to get through a large amount of drafting with great efficiency, patience and unfailing good humour. They drew on the expertise of other Departmental colleagues and were supported by Assistant Secretary General, Sinead McPhillips and the Secretary General of the Department, Brendan Gleeson. I would also like to acknowledge the valuable contribution from our State Agencies, Teagasc, Bord Bia, BIM and Enterprise Ireland. I also wish to thank the many experts from a variety of fields who delivered presentations to the Committee, as well as to all those members of the public and the many organisations who made submissions to the two public consultations that took place. I believe that this extensive level of engagement complemented the work of the Stakeholder Committee and when taken together, represents an unprecedented example of participative deliberation and collaboration in developing a Strategy of this nature. Finally, I want to thank the members of the 2030 Agri-Food Stakeholder Committee. Their diversity of backgrounds, expertise and views undoubtedly served to produce a Strategy that reflects that diversity and I acknowledge their great commitment and diligence to our task. Although we had to do our work in the time of COVID, it was done in a real spirit of positivity. For my own part, it has been an honour and a pleasure to have chaired the process.

Tom Arnold
Chair, 2030 Agri-Food Strategy Stakeholder Committee

Tom Arnold, Chair, 2030 Agri-Food Strategy Stakeholder Committee



STAKEHOLDER COMMITTEE

TERMS OF REFERENCE

The Committee will prepare and present to the Minister for Agriculture, Food and the Marine, a strategy for the development of the agri-food sector for the period to 2030. The strategy will outline the vision and key objectives, with associated actions, required to ensure the economic, environmental and social sustainability of the agri-food sector in the decade ahead. The Committee's report will be short, specific and cross-sectoral, with ambitious but realistic actions.

MEMBERSHIP

Tom Arnold	Chairperson	Paul Finnerty	Co-Founder & Chairman, Yield Lab Europe	Pat Murphy	Chair, IBEC Dairy industry Ireland and CEO, Kerry Ireland
Sharon Buckley	Group Commercial Director, Musgraves	Thia Hennessy	Dean & Chair Agri-Economics, UCC	Larry Murrin	IBEC Prepared Consumer Foods Council and CEO, Dawn Farm Foods
Laura Burke	Director General, EPA	Liam Herlihy	Chair, Teagasc	Colm O'Donnell	President, INHFA
Ailish Byrne	Head of Agri, Ulster Bank	Martin Higgins	Chair, FSAI	Sean O'Donoghue	CEO, Killybegs Fishermen's Organisation
Kieran Calnan	Chair, Bord Iascaigh Mhara	Caroline Keeling	CEO, Keelings	Dolores O'Riordan	Director, UCD Institute for Food and Health
Philip Carroll	Chair, IBEC Meat Industry Ireland	Jerry Long	President, ICOS	Terence O'Rourke	Chair, Enterprise Ireland
Karen Ciesielski*	Coordinator, Environmental Pillar	Oliver Loomes	Chair, IBEC Drinks Ireland and Ireland Director & Chairman, Diageo	Edmond Phelan	President, ICOSA
Frank Convery	Senior Partner, EnvEcon	Dan MacSweeney	Chair, Bord Bia	Alice Stanton	Professor, Royal College of Surgeons in Ireland & Director for Human Health, Devenish
Tim Cullinan	President, IFA	Pat McCormack	President, ICMSA	Siobhán Talbot	CEO, Glanbia
Thomas Duffy	President, Macra na Feirme	Tom Moran	Former Secretary General, DAFM		
Brendan Dunford	Manager, Burren Programme	Brian Murphy	Chair, IBEC Forest Industries Ireland and CEO, Balcas		
Julie Ennis	Country President, Sodexo Ireland				

* Karen Ciesielski withdrew from the Committee on February 25th 2021



Agri-Food Strategy 2030 – Stakeholder Committee

Absent from picture – Karen Ciesielski, Tim Cullinan, Liam Herlihy, Martin Higgins, Oliver Loomes, Dan McSweeney, Brian Murphy, Pat Murphy, Seán O'Donoghue, Terence O'Rourke.

EXECUTIVE SUMMARY





THE VISION

The 2030 Vision for Ireland's Agri-Food Sector

Ireland will become a world leader in Sustainable Food Systems (SFS) over the next decade. This will deliver significant benefits for the Irish agri-food sector itself, for Irish society and the environment. In demonstrating the Irish agri-food sector meets the highest standards of sustainability – economic, environmental, and social – this will also provide the basis for the future competitive advantage of the

sector. By adopting an integrated food systems approach, Ireland will seek to become a global leader of innovation for sustainable food and agriculture systems, producing safe, nutritious, and high-value food that tastes great, while protecting and enhancing our natural and cultural resources and contributing to vibrant rural and coastal communities and the national economy.

To realise this Vision, the Strategy has adopted four high level Missions for the agri-food sector to work towards in the period to 2030.



THE WIDER CONTEXT AND THE NEED FOR A TEN YEAR AGRI-FOOD STRATEGY

For the purposes of this Strategy, the Irish agri-food sector includes primary agriculture, food and drink processing and manufacturing, fisheries, aquaculture and fish processing, forestry and forestry processing and the equine sector. It is Ireland's oldest and largest indigenous industry. In 2020, the sector accounted for almost 7% of modified Gross National Income (GNI*) and 10% of exports in value terms. It employs approximately 164,400 people, representing 7.1% of total employment. At primary production level, some 137,500 farms, over 770,000 hectares of forest, over 2,000 fishing vessels and some 180 aquaculture sites produced an estimated €8.5 billion in output in 2019. The agri-food sector grew substantially over the past decade, with Irish food and drink exports increasing from by 60% from €8.9 billion in 2010 to €14.2 billion in 2020. The sector produces food and ingredients with a global reputation for quality and safety, with a livestock sector built on an enviable grass based production system. Global demand for high quality food is increasing with population, urbanization and affluence, and the Irish agri-food sector is well placed to play a role in meeting this demand.

PRIMARY PRODUCERS

Primary producers – farmers, fishers and forest owners – are fundamental to this Strategy and are the foundation for the entire sector. Primary producers' economic viability is crucial not only in terms of their ability to make a decent livelihood and return for

their endeavours, but also in helping to deliver on environmental and social sustainability. The social sustainability of primary producers is all too often an over-looked dimension. Social factors such as generational renewal, gender balance, education and training, health and safety, mental health and wellbeing and broader rural development need to be considered and improved.

Negotiations on the new Common Agricultural Policy (CAP) are being finalised at the time of writing this Strategy. The next CAP will provide in excess of €10.6 billion in EU funding to farmers and rural communities in the period from 2023 to 2027. Ireland has been consistent on the need for a strong CAP and has also stressed the need to ensure better environmental and climate outcomes for the CAP. Central to environmental ambitions is the protection of farm incomes and a just and inclusive transition. Meanwhile, the Common Fisheries Policy (CFP) is reviewed every 10 years and the next review is scheduled to be completed by end 2022 when the European Commission will report to the European Parliament and the Council on the functioning of the CFP. When the report has been presented, if any changes are required, the Commission will bring forward a proposal for an amendment of the CFP Regulation. Ireland will be seeking that the upcoming review of the CFP must address the disproportionate impact on the Irish fishing industry by Brexit. The new EU-UK Trade and Cooperation Agreement (TCA) will have a particularly significant impact on the seafood sector. A Seafood Sector Taskforce has been established to examine the implications arising from the TCA for the sector and the coastal communities who depend on it. The Task Force, involving seafood industry representatives and other stakeholders, will recommend measures to mitigate the impacts of the fish quota share

reductions, on the Irish fishing industry and on the coastal communities that depend on fisheries. In its interim report, published in June 2021, the Taskforce recommends that a voluntary tie-up scheme be put in place for the period September to December for the approximately 220 polyvalent vessels and beam trawlers directly impacted by the quota transfers under the TCA. The interim report also recommends a range of initiatives to address the quota reductions in the TCA. These recommended actions will be considered further by the Taskforce and will be set down in detail in the Taskforce's main report.

The European Green Deal, Circular Economy and Biodiversity Strategies, as well as higher health and environmental ambition in the Farm to Fork Strategy that will be reflected in the next common agricultural and fisheries policies, will have consequences for primary producers. Taken together, they will require substantial change in how we farm and fish, manage our forests and how we process, distribute and consume food and bio-based products. Coupled with national policy developments, higher standards and constraints across a range of indicators can add to the cost of production. While the Strategy supports the direction of these policies, Ireland will need to proactively engage to influence the direction of the implementing regulations under each of these initiatives, to take account of national circumstances and legitimate interests and concerns. In addition, detailed impact assessments will need to take place. Consideration will be needed as to where the burden of these costs will lie, with the primary producer, food distributors or processors, retail, food service, consumers or public funds. It is clear that primary producers alone cannot be expected to bear this cost.

THE ENVIRONMENT

Agriculture has a key role in protecting both our climate and environmental credentials. The sector is the largest contributor to Ireland's greenhouse gas emissions, accounting for around a third, and from an air quality perspective is almost exclusively responsible for ammonia emissions. While challenging from an Irish perspective, and unusual in an international context, these facts are reflective of the economic, and historical, importance of agriculture in Ireland, relative to other industries. As the predominant land use in Ireland, agriculture exerts significant pressure on water quality. Changes in agriculture, forestry and fishing activities have also impacted on biodiversity on land and sea. While overall bovine numbers have remained relatively stable, the removal of milk quotas has led to an expansion in the dairy herd, resulting in particular environmental pressures. However all farming systems have a role to play in reducing agriculture's impact on climate and the environment.

Facing into the decade to 2030, the agri-food sector can make significant and urgent improvements in its environmental footprint. With leadership from stakeholders, the sector can take the steps necessary to improve its environmental performance and protect and enhance its reputation as a sustainable producer of quality food. It will also mean that Ireland can take a leading position internationally as an advocate of Sustainable Food Systems.

FOOD, MARKETS, HEALTH AND NUTRITION

Ireland's agri-food system, including its farmers, fishers and food businesses, plays a vital role in the daily lives

not only of the Irish population, but millions more across the globe. Exporting around 90% of output, feeding and nourishing people at home and abroad, the sector has a lot to be proud of. Indeed, its role in ensuring safe, secure supplies of quality food and drink was brought to the fore during the COVID-19 pandemic, and this has re-awakened consumer appreciation for where their food comes from and how it is produced, processed, distributed and sold.

Food security and nutrition is a key component of Sustainable Food Systems, particularly the link between food and health. It is important that the sector contributes to ensuring coherent food and health policies that deliver improved health outcomes.

National and international consumer and trade customer trends are evolving and complex. However one aspect that can be considered a constant is an expectation that the food and drink is safe, traceable and authentic, and produced, processed and sold in a transparent, ethical manner. Ireland's agri-food sector already has a strong reputation, but must continue to assess its own performance and evolve to keep up with changing demands in these areas. The need for in-depth consumer insight, and the creation of value added through innovation and product differentiation, is hugely important.

Tremendous progress has been made in the last decade in expanding the reach of Irish food and drink to consumers across the globe. Selling into international markets is challenging, and the sector has to be agile and ready to develop and capitalise on business opportunities that arise. A fair, balanced, and rules-based international trading system is also a key enabling factor in this. Evolving consumer

trends in the domestic market, accelerated during the Covid-19 pandemic, will also open up new and exciting opportunities for businesses in the coming decade.

INNOVATION, COMPETITIVENESS, TECHNOLOGY AND TALENT

With highly competitive global markets, the sector has to work hard to protect its reputation and continuously strive to innovate and maintain a level of competitiveness and resilience that enables it to prosper and develop in a globalised trading environment.

An effective innovation system, a strategic approach to R&D funding and an engaged and responsive knowledge exchange environment are fundamental. The decade between 2020 and 2030 is likely to see even greater advancements in the use of technology and data in farming, fishing and forests and in food and drink companies. Precision agriculture is evolving at a rapid rate and it is critical that Ireland's agri-food sector is positioned to take advantage of this.

A further key fundamental is having the optimum mix of diverse, skilled, and appropriately trained talent. The sector has to compete with many others in attracting and retaining people from primary production level right up to consumer interfacing positions.

DEVELOPING A STRATEGY IN THIS CONTEXT

The agri-food sector in Ireland has benefited from an approach to strategic planning involving the development of ten-year stakeholder-led strategies, updated every five years. Since their inception

twenty years ago, up to the current Food Wise 2025 plan, these strategies have provided the sector with a coherent, stakeholder-led vision, to underpin its continued development. This form of ‘participative’ deliberation and involvement in preparing the Strategy means that the sector itself is its owner and has a strong vested interest in successful implementation.

In November 2019, a committee of stakeholders in the agri-food sector, chaired by Tom Arnold, was established. Its terms of reference required it to outline the vision and key objectives, with associated actions, to ensure the economic, environmental and social sustainability of the agri-food sector in the decade ahead. The Committee met throughout 2020 and into 2021, deliberating on a wide range of opportunities and challenges facing the sector, within the broad context outline above. In parallel, a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) were prepared independently to determine the likely significant effects on the environment of implementing the Strategy. These were then published as part of a public consultation, the results of which were considered by the Stakeholder Committee prior to finalising the Strategy.

A NEW, FOOD SYSTEMS APPROACH

The interconnectedness of policies for food, health, climate and the environment in addressing the great global challenges is clear and has come into increasing focus at international level. The central theme of this Strategy is that this interdependence should be recognised within national policy, by using a food systems approach.

The term ‘food system’ covers ‘all the elements and activities that relate to the production, processing, distribution, preparation, and consumption of food, and the output of these activities, including socio-economic and environmental outcomes’. A sustainable food system (SFS) is profitable throughout (economic sustainability), has broad-based benefits for society (social sustainability) and has a positive or neutral impact on the natural environment (environmental sustainability). Each country has its own distinctive food system, based on its natural resource base, climate, production patterns, eating habits and history. Food systems are expected to provide food security and nutrition for a world population which is projected to grow to nearly 10 billion by 2050. Food systems are also central to the livelihoods of hundreds of millions of households around the world. Moreover, they are not only highly dependent on the environment, but also exert significant pressure on it. To speak of a food system is to broaden the perspective beyond agriculture and to recognise the inter-connected concerns of health, wellbeing, its diverse cultural meanings, the skills, knowledge and self-esteem that it promotes, and its role in strengthening community.

While each ten-year Strategy was of its time and was determined by the circumstances of the time, this Strategy to 2030 signals a significant change in direction and policy compared to previous strategies. It has been drawn up using a ‘food systems approach’ which acknowledges the link between policies for food, climate, the environment, and health (human, animal and planetary), and focuses on the role each part of the food chain has in delivering the 2030 vision. These features of a food systems approach are woven throughout the Strategy, particularly in the Missions and Goals. Moving towards a SFS should meet the needs of Irish society and position Ireland internationally in its trade and other relationships. **The future source of competitive advantage for the Irish agri-food sector lies in being able to demonstrate that it meets the highest standards of sustainability (in all its forms), such that it can be considered among the world leaders in this field. This is the basis on which Ireland can meaningfully build on its ‘green’ reputation and aspire to gaining market share in high value international markets and in certain cases, gaining a premium price for what it sells.**

If this ambitious objective is to be achieved, Ireland’s agri-food sector, along with Government and society, will have to make significant changes. The sector should aim to become climate-neutral by 2050, with verifiable progress by 2030, encompassing emissions, biodiversity and water quality. The Strategy signals actions aimed at making the sector more diversified, resilient and based on circular economy principles. It proposes expansion in nature-based production systems (considered as carrying out farming activities designed to result in agricultural, ecological and climate benefits on the farm), tillage, horticulture, afforestation

and organic production. But the core of Ireland's agri-food output will continue to be grass based livestock production wherein lies Ireland's natural competitive advantage. Given that 80-90% of output is exported, the long-standing policy of supplying an increasingly diversified range of export markets and developing new high-value markets will continue. The aim is to secure a premium price for as high a percentage as possible of Irish output and ensure that this premium is shared across the value chain, including the primary producer. In aiming to become an international leader in SFSs, a consistent policy framework and a culture of continuous improvement across all the actors in the food chain will be required.

Ireland is likely to be one of the first countries in the world to develop a national agri-food strategy using a food systems approach. The Strategy will provide a coherent policy framework for Ireland to make an important contribution to the international discussion taking place on food systems over the coming years, and in particular the UN Food Systems Summit (FSS). A probable outcome of these discussions will be a greater prioritisation, at national and international level, of a sustainable food system approach in future planning.

In committing to this Strategy as a pathway to achieve such improvement, Ireland's agri-food sector aims to become a thought, policy and practice leader in SFSs. If such a leadership position can be attained, particularly at the Food Systems Summit in September 2021, this could provide the basis for a continuing leadership role during the coming decade. It is also likely to open opportunities for international collaboration, with Ireland becoming a leading supplier of policy advice and services to countries adopting their own SFSs, particularly in Africa.

THREE PILLARS OF SUSTAINABILITY

The terms of reference for the Stakeholder Committee were explicit in stating that the sustainability of the agri-food sector to 2030 be considered in three dimensions – economic, environmental and social. The pressure on the agri-food sector to deliver sustainability comes from a powerful combination of changing societal demands, consumer behaviour, political decisions, and the requirements of major trade customers for Irish food and drink. In addition, there is an increased focus on our legal and social responsibilities to care for the environment for future generations, and an improved understanding of how fundamental a healthy environment is for producing healthy and nutritious food.

The three sustainability components are not compartmentalised and there is an important interplay between them. Working towards each dimension of sustainability draws on policies across the four Missions that have been established. The Strategy recognises that economically sustainable farmers, fishers and forest owners are an integral part of the rural and coastal community and that healthy environments, ecosystems, communities and economies go hand in hand. It recommends policies that present opportunities to primary producers of high quality, safe food and fibre. It also points the way to primary producers being providers of a much broader range of ecosystem services, so while continuing to produce food, they will also be engaged in areas such as sequestering and capturing carbon, cutting ammonia and methane emissions, supporting

biodiversity, managing water resources, and protecting and enhancing soil health. These in turn contribute to social sustainability. More needs to be done at EU and national level to agree the policy instruments and incentive structures to support these policies and expanded range of ecosystem services which citizens and consumers demand and which are crucial to the health of our planet and our society.

In moving towards sustainability becoming more embedded in the agri-food system, the issue of policy sequencing, timeframes for implementing policy change, and the use of the Just Transition approach will be important. Just Transition acknowledges that in moving to a climate resilient and low carbon sector, policy should seek to ensure that the change is fair for producers, workers and communities. There are trade-offs between the different dimensions of sustainability. These need to be acknowledged and a willingness shown to reach realistic compromises on the direction of change and the speed at which it can take place. This Strategy sets out the framework from which such choices and decisions can be made.



FOUR MISSIONS FOR THE AGRI-FOOD SECTOR TO 2030

The Strategy has adopted a framework which revolves around the concept of high-level Missions which are underpinned by a series of key goals and actions. This reflects a movement in recent times to mission-oriented policy which responds to 'grand challenges' and moves away from narrow sector-based approaches to more system-wide transformation. This Strategy has four Missions and 22 Goals.

MISSION 1

A CLIMATE SMART, ENVIRONMENTALLY SUSTAINABLE AGRI-FOOD SECTOR

- GOAL 1:
Develop a Climate Neutral Food System by 2050 and Improve Air Quality
- GOAL 2:
Restore and Enhance Biodiversity
- GOAL 3:
Protect High Status Sites and Contribute to Protection & Restoration of Good Water Quality and Healthy Aquatic Ecosystems
- GOAL 4:
Develop Diverse, Multi-functional Forests
- GOAL 5:
Enhance the Environmental Sustainability of the Seafood Sector
- GOAL 6:
Embed the Agri-Food Sector in the Circular, Regenerative Bioeconomy
- GOAL 7:
Strengthen Origin Green & Sustainable Supports to Reflect the Higher Level of Ambition

MISSION 2

VIABLE AND RESILIENT PRIMARY PRODUCERS WITH ENHANCED WELL-BEING

- 
- GOAL 1:**
Improve the Competitiveness and Productivity of Primary Producers
 - GOAL 2:**
Improve the Creation and Equitable Distribution of Value
 - GOAL 3:**
Increase Primary Producer System Diversification
 - GOAL 4:**
Improve the Social Sustainability of Primary Producers

MISSION 3

FOOD WHICH IS SAFE, NUTRITIOUS AND APPEALING, TRUSTED AND VALUED AT HOME AND ABROAD

- 
- GOAL 1:**
Prioritise Coherent Food and Health Policies to Deliver Improved Health Outcomes
 - GOAL 2:**
Enhance Consumer Trust in our Food System, Providing Evidence of a Safe, Ethical Food Supply
 - GOAL 3:**
Create Value-Add in Food Through Insight, Innovation and Product Differentiation
 - GOAL 4:**
Develop Market Opportunities at Home and Abroad

MISSION 4

AN INNOVATIVE, COMPETITIVE AND RESILIENT AGRI- FOOD SECTOR, DRIVEN BY TECHNOLOGY AND TALENT

- 
- GOAL 1:**
Move to a Challenge-Focused Innovation System
 - GOAL 2:**
A Strategic Funding Approach for Research, Development and Innovation
 - GOAL 3:**
Develop a Dynamic Knowledge Exchange Environment
 - GOAL 4:**
Enhance the Use of Technology and Data
 - GOAL 5:**
Maintain and Improve Competitiveness and Resilience
 - GOAL 6:**
Attract and Nurture Diverse and Inclusive Talent
 - GOAL 7:**
Policy Coherence in Sustainable Food Systems Between Ireland's Domestic Policy and its Development Cooperation and Foreign Policy

MISSION 1: A CLIMATE SMART, ENVIRONMENTALLY SUSTAINABLE AGRI-FOOD SECTOR

The Strategy takes a systematic approach to addressing the challenge of ensuring that Ireland can continue to produce high quality food in a manner that protects the environment and mitigates climate change. Previous agri-food strategies, particularly Food Wise 2025, have highlighted the importance of environmental sustainability, but this Strategy brings it to a new level of centrality and commitment. The Strategy has the objective of achieving a climate-neutral food system by 2050, with verifiable progress achieved by 2030, encompassing emissions, biodiversity and water quality, as well as a range of other targets for forestry, fisheries, organic farming and food waste. The Mission takes a detailed, systematic approach to address each aspect of the environment – climate, ammonia, biodiversity, water, forests, seafood, the bioeconomy, food loss and waste, and packaging.

Working towards a climate-neutral food sector by 2050 will happen within the framework of the five-yearly sectoral budgets provided for under the auspices of the Climate Action and Low Carbon Development Bill, to be decided during 2021. In advance of these decisions, the Strategy outlines a roadmap to deliver on the ambition of a climate-neutral sector by 2050.

This strategy builds on Ag Climatise, the roadmap for delivering the emissions reductions targets for

Agriculture in the Government's Climate Action Plan 2019. Ag Climatise includes 29 actions, largely based on evidence from the Teagasc Marginal Abatement Cost Curves, that aim to reduce the sector's environmental footprint. It represents a foundation stone upon which the additional measures in this Strategy will build and will be updated on a regular basis.

Ag Climatise makes clear that any increase in biogenic methane emissions from continually increasing livestock numbers will jeopardise the achievement of the sector attaining climate neutrality by 2050. Therefore it is proposed that detailed plans to manage the sustainable environmental footprint of the dairy and the beef sectors will be produced by Q2 2022. This will take into account their respective environmental footprints; the plans for reduction in total methane, nitrous oxide and ammonia emissions; the impact of management practices and existing technologies at farm level. It will also take account of, emerging methane and ammonia mitigation technologies; the promotion of better pasture management, including reducing chemical fertiliser use; increasing clover and multi-species pasture swards; genetics and feed additives.

Carbon-farming offers a potentially new source of income for farmers but it is still in the early stages of development. The Ag Climatise Roadmap proposes

a pilot scheme for on-farm carbon trading to reward farmers for the public goods they are providing. This should align with the proposed EU Carbon Farming Initiative as set out in the Farm to Fork (F2F) Strategy, whereby a new regulatory framework for certifying carbon removals will underpin a payment to farmers. In addition to public funding, multiple sources of finance will be required, including from the private sector.

The Strategy proposes the scale-up of renewable energy (RE) sources, especially anaerobic digestion, solar PV, supply of biomass materials and energy efficiency. The roll-out in 2021 of an enabling framework for micro-generation which tackles existing barriers and establishes suitable supports, as foreseen in the Climate Action Plan 2019, will be crucial to the delivery of this action.

The Strategy proposes more targeted agri-environmental schemes under the next CAP Strategic Plan to protect Ireland's habitats and species. These schemes should include results-based actions, including payments for specific measures, drawing on the lessons from the European Innovation Partnerships. Consideration should be given to the development of a dedicated programme for High Nature Value (HNV) farmland and to researching the concept of 'Regenerative Agriculture', particularly under Irish conditions, with an emphasis on improving the health and multifunctionality of soils.

The Strategy also makes other recommendations across biodiversity, water, seafood and forestry. These include a commitment that Ireland will play an active and constructive role in the development of measures to realise the objectives for pesticide use reduction in the EU Biodiversity Strategy 2030 and the Farm to Fork Strategy; the development of a National Soils Strategy that will assess all appropriate soil health parameters and inform future policies on good soil management practices; conducting biodiversity studies to inform future policy development and measure progress; conducting a national land use review and the development of a 50-year vision on sustainable land use, land cover and land management including farmland, forests and peatlands; the development of a new Forestry Strategy; an examination of the option of afforestation on state owned lands, building on initiatives from Coillte and Bord na Mona. Actions are proposed to develop an all-of-value National Food Waste Prevention Roadmap with clear national and sectoral targets for 2030.

There is scope for additional income and employment opportunities arising from embedding the agri-food sector in the circular bioeconomy. These opportunities can come from the use of raw materials from grassland, crops, forestry and bio-marine systems to develop new bio-based value chains and this Mission expands on some of these opportunities.

Systems of food production, processing, packaging, distribution and logistics that contribute to environmental degradation are no longer ethically acceptable to society or consumers. An increasing number of global brands, some of which are customers of Irish food and drink, are placing their sustainability credentials front and centre as the next source of competitive advantage. Ireland has built a strong reputation for sustainable food by having the world's only national food and drink sustainability programme - Origin Green. The Strategy signals that Origin Green now needs to adapt to a higher level of environmental ambition and to achieve 'stretch targets' with participants. The Mission proposes that collaboration between agencies such as Bord Bia and Teagasc intensify to support the reduction of agricultural emissions, drawing on the respective strengths of both agencies to reduce the negative environmental impact of agricultural production and assure Ireland's reputation as a source of sustainable food production. A key element to the partnership will be promoting a coordinated approach to communications on sustainability to support farmers reduce their on-farm emissions, and the roll out of the Teagasc SignPost Farms programme will be an important element in this. Other actors – knowledge exchange practitioners, research institutions, State Agencies and NGOs – will also need to collaborate on ways to realise our environmental ambitions.



The range of agri-environmental measures proposed in the Strategy represent a statement on the important role the agri-food sector can play in living up to expectations on the environmental commitments. The Strategy envisages a pathway through which primary producers can assume a broader role in responding to the climate and biodiversity emergency, not only producing nutritious high quality food, but also becoming providers of a range of eco-system services, for which they will be financially rewarded based on delivery. It is hoped that the vision and commitments in the Strategy will enable farming, seafood, forestry and environmental groups to see a commonality of interests and provide a basis to work together on an agreed agenda for the future.

MISSION 2: VIABLE AND RESILIENT PRIMARY PRODUCERS WITH ENHANCED WELL-BEING

Mission 2 focuses on the areas which offer the best tools for improving economic viability and resilience of primary producers; both by their own actions and initiatives within the agri-food sector as a whole. Farmers can bolster their financial and economic sustainability by focusing on efficiencies; embracing new, diversified systems of agriculture; meeting standards required for greater premiumisation that can offer higher market returns; and being rewarded for the delivery of a range of eco-system services.

A common theme across the Missions is the need to work towards a more resilient and diversified system, capable of coping with the risks associated with changes in economic and climatic circumstances. While grass-based production of milk, beef and sheep will continue to account for the dominant part of agri-food output, the Strategy proposes there should be better integration within the sector, including dairy/beef and dairy/tillage linkages. The Strategy proposes expansion in tillage, horticulture, organic farming and agro-forestry, as well as a plan to reduce Ireland's dependence on imported protein crops. This Mission also envisages there being a place in Ireland's agri-food sector for all types of primary producer, whether full time or part time, big or small. A diversity of farming, fishing and forestry systems offers the best approach towards achieving all forms of sustainability and one should not be considered better than the others.

A more equitable distribution of value in the food system

Improving price transparency is one method of possibly improving returns to primary producers. The Unfair Trading Practices Regulations 2021, which come into effect from July 2021, apply to agreements for the supply of agricultural and food products, and prohibit certain unfair trading practices as set out in the Unfair Trading Practices Directive. Primary legislation, to be introduced before the end of 2021, will establish a new office of the National Food Ombudsman or regulator, with additional responsibilities. There is a relatively low uptake of Producer Organisations and use of Geographical Indicators in Ireland, and the Strategy proposes actions to support these initiatives. In addition, quality assurance schemes and new forms of producer-processor contracts have potential to improve value creation and distribution in the supply chain and the Strategy outlines actions relating to these.

Broadening income sources within a more diversified and resilient sector

The Strategy outlines likely additional on-farm and off-farm income sources to support farm household viability. Future income sources could range from the market for food products, to payment for carbon sequestration and storage, microgeneration of energy, protecting habitats and species, and providing other ecosystem services. While afforestation is

experiencing some challenges currently, it offers an added income stream for farmers, along with other options such as organic farming, horticultural production, contract rearing of livestock, eco-tourism, amongst others. Fishers can continue on a path of sustainable economic development by managing the utilisation of sea-fisheries. Building sustainable aquaculture enterprises, and expanding and investing in technology to develop the processing industry and improve productivity are also key objectives.

Ireland's new rural development policy "Our Rural Future" will also be an important factor in determining the range of income and employment opportunities for farm households and the wider rural community. This plan will address key policy challenges and offer solutions on issues affecting rural areas, including the crucially important issue of broadband availability.

An enhanced focus on social sustainability and well-being

Social sustainability is also a major focus of this Mission. There is a direct connection between the social vibrancy of rural and coastal communities, the commercial and environmental performance of primary producers, and those connected in upstream and downstream activities, particularly the food and drink industry. There are a multitude of factors that could be considered as influencing and driving social sustainability, but this Strategy has focused on a

number of key ones which are highly relevant to the agri-food sector.

Recommendations are made on how to improve measurement and reporting of social sustainability. Generational renewal and the importance of encouraging and facilitating new entrants to farming, fishing and forestry are highlighted. The Strategy supports an enhanced role for women in the sector and recommends the establishment of female farmers' networks and other supports to better understand and meet the needs of Irish women farmers, fishers and rural female entrepreneurs. The Strategy calls for continuous updating of education and training programmes to meet the changing needs of the sector and emphasises the importance of lifelong and peer-to-peer learning.

The number of injuries and accidental deaths in farming and fishing is unacceptable and there must be greater emphasis on occupational safety. The Strategy proposes the introduction of mandatory health and safety skills training for all those working on farms and enhanced training for fishers. There are continuing problems of rural isolation and there needs to be greater focus on mental health and well-being. The COVID-19 crisis has shown many examples of community solidarity but as Irish rural society emerges from this crisis, more systematic attention needs to be paid to the underlying challenges of rural isolation

and mental health, which the Strategy also attempts to address. Associated with this is the need for LGBTI+ inclusivity, strong rural development policies and new community engagement initiatives, as well as the rapid roll out of high-speed rural broadband.



MISSION 3: FOOD WHICH IS SAFE, NUTRITIOUS AND APPEALING, TRUSTED AND VALUED AT HOME AND ABROAD

Food security and nutrition is a key component of Sustainable Food Systems, particularly the link between food and health. It is important that the sector contributes to ensuring coherent food and health policies that deliver improved health outcomes and this is a key focus of this Mission. The Strategy acknowledges that there is a need for a wider public discussion on the role of food in society. Part of this discussion should be the price people are willing to pay for food produced to high standards, as well as the relative affordability of nutritious foods compared to less healthy choices. There is increasing demand for natural, sustainably produced food and a strong growth in the sales of milk and meat alternatives, based on consumer demand for vegan or 'flexitarian' choices and recognition of the importance of fruit and vegetables in a healthy diet. There is also a lively debate, nationally and internationally, about the role of animal-sourced foods in diets. The Strategy contributes to this debate, with a statement on the value of animal-sourced foods in diets for children, adolescents and adults.

Consumers expect that the food and drink they purchase is safe, traceable and authentic, produced, processed and sold in a transparent, ethical manner. Ireland's agri-food sector has a duty to meet these standards and expectations and while working off a strong base, has to evolve to keep up with rising

demands in these areas. The Mission contains actions to ensure the continued supply of food and drink that meets these rising expectations both at home and in international markets. For example, a new National Action Plan for Antimicrobial Resistance, using a One Health approach, will be developed, and implementation of the new National Animal Welfare Strategy, which uses a One Health One Welfare approach, will be pursued.

OECD/FAO projections suggest that the long-term trend of stable or a slight reduction in the real price of food will continue over the next decade. The Strategy takes the position that being able to demonstrate that Ireland has high standards of sustainability offers the best approach for seeking a price premium and/or enhanced market share. It suggests that the customers of Ireland's food and drink (retailers, the food service sector and consumers) should play their part in helping the sector become more sustainable. Insight, innovation and product differentiation and developing opportunities at home and abroad are further important elements in adding value and this Mission sets out actions to advance these.

Arising from Brexit, the UK is likely to open up its market for food through a set of new trade agreements which could impact on UK price levels, particularly during the second half of the decade. This Strategy envisages Irish agri-food protecting and building on its

strong position within the British market for key food and drink exports, while recognising that the market is likely to become more competitive. The long-term policy of increasing trade diversification will continue, but the unique importance of the UK market for the Irish agri-food sector will remain. Building on Ireland's reputation for providing safe, sustainable, and high-quality food will be key to maintaining a strong market position in the UK.



MISSION 4: **AN INNOVATIVE, COMPETITIVE AND RESILIENT AGRIFOOD SECTOR, DRIVEN BY TECHNOLOGY AND TALENT**

Innovation is fundamental to achieving sustainability in all its forms. Ireland's agri-food sector has been making good progress in embracing technology and innovation in recent years. In the period to 2030, a wide range of new digital innovations and data capture and analysis techniques will emerge. These will change the way we manage our natural assets; produce, process and distribute food and its by-products and residues; and improve transparency along the food chain. The sector stands on the cusp of being able to utilise these technologies, data and innovation to enable the new sustainability improvements that are required and to capture and share their impact.

A review that was conducted as part of Food Wise 2025 into the innovation capacity in the agri-food sector concluded that whilst the level of knowledge creation is significant, the level of collaboration is inadequate, both within and between the public and private sectors, and that there is too little focus on the end user or consumer, and on measurable outputs. The review recommended that innovation must go further than product and process innovation, and that a new approach is needed that is output-based and mission-orientated. Mission 4 thus recommends a new approach to innovation by moving to a challenge-focused agri-food innovation system that will deliver increased cohesion of public and private actors and deliver on the vision of Ireland as a global leader

of innovation for sustainable food and agriculture systems.

This Mission also recommends a more strategic approach to R&D funding and calls out the need for greater private sector spend on R&D, new forms of knowledge exchange that sees end-users such as farmers playing a more active role and embracing peer-to-peer learning and a more dynamic knowledge exchange environment, with a focus on translating research findings and innovations to practical implementation on farms and in agri-food and seafood businesses.

Mission 4 also makes a number of recommendations in order to more fully embrace the digital revolution that is taking place in agriculture, food, fisheries and forestry. This is a really exciting area and while there are great examples of ag-tech centres and businesses, the Strategy has concluded that it is still at a relatively early stage of development.

The Strategy also makes recommendations in the areas of competitiveness and resilience, including greater up-take of industry supports, improved access to affordable finance, and support for enabling technologies such as biorefining, advanced manufacturing and digitalisation, plant renewal and expansion, refinancing, and market development. In addition, the Mission focuses on the crucially important enabler of attracting and nurturing diverse

and inclusive talent. The nature of many of the roles in the sector is likely to change quite substantially in the period to 2030, as will the career preferences of young people. The Mission calls on employers to develop education, skills and talent attraction and retention strategies, while also proposing measures to deal with labour shortages, reviewing education and training programmes, as well as a series of actions to promote and improve gender balance, while also rolling out initiatives to improve diversity and inclusion.

Finally, this Mission can be considered 'enabling' in that its Goals and actions are of such a cross-cutting nature that they will be critical to facilitating the delivery of other Missions and Goals in the Strategy.

COMMUNICATING THE STRATEGY'S VISION

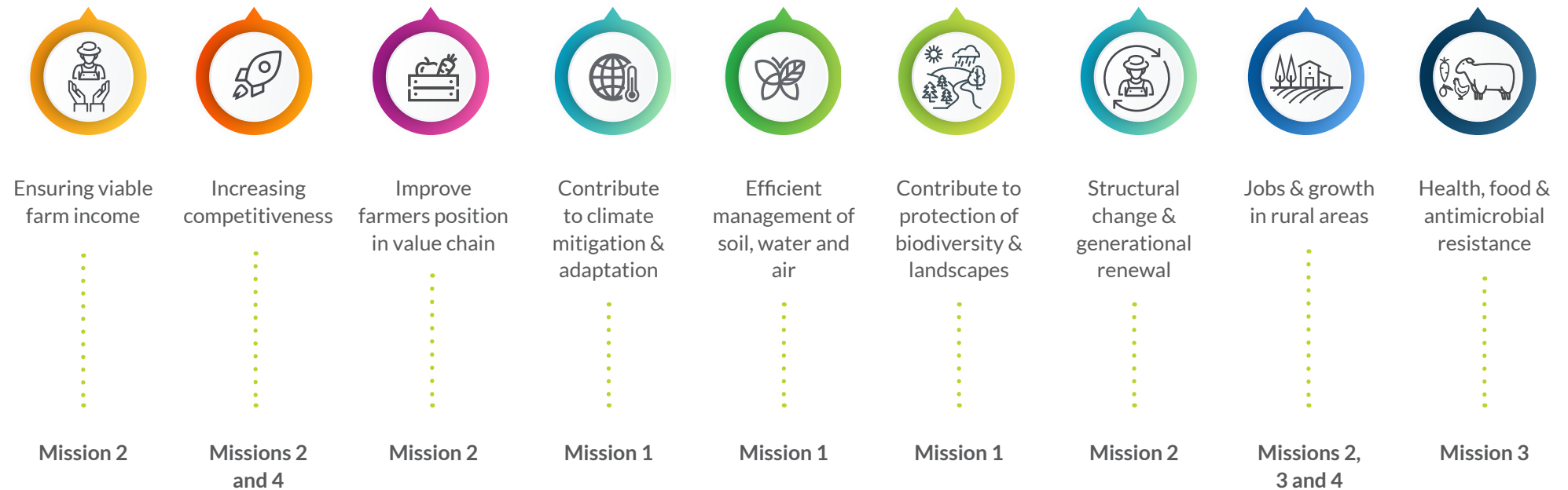
The Strategy's primary role is to provide a vision and associated policies for the sector for the coming decade. But it also has an important role in communicating an Irish vision and commitments to key audiences at EU, UK and international level, and to the major customers for Irish food and drink. Ireland should seek to carve out a thought, policy and practice leadership role, at European and international level,

for a number of issues where it has the credibility and capability to play such a role.

Over the past decades the EU's CAP has been a major source of income support and has evolved to broaden its scope to food safety, rural development, and animal welfare. The new stage in the CAP's evolution will have noticeably higher environmental ambition with national Strategic Plans focusing on economic, environmental and social goals across nine key objectives. The Strategy aligns very well with these nine objectives, as demonstrated in the figure below.

There are clearly synergies between both processes and it is likely that many elements of the new CAP will contribute to the implementation of actions contained in this Strategy. Notably, the new CAP will contain new green architecture, featuring strengthened mandatory requirements and increased funding opportunities for green farming. In particular, a new stream of funding from the CAP's direct payments budget for "eco-schemes" will be introduced, which will support and incentivise farmers to undertake agricultural practices beneficial for the climate, biodiversity, and the environment.

CAP OBJECTIVES & STRATEGY MISSIONS



The sector can be part of the agenda for deepening the bilateral relationship between Ireland and the UK in the post-Brexit era: the nature of that engagement should be explored in the light of this Strategy and the outcomes of the review of UK food policy currently underway and expected to be completed during 2021. The special status of Northern Ireland, resulting from the Ireland/Northern Ireland Protocol of the UK/EU Withdrawal Agreement, offers a number of possibilities for increased cooperation and exchange of best-practice on an All-Island basis. There could also be scope for additional novel forms of collaboration, involving the UK and Irish governments and the EU, on some of the EU's Moonshot Missions such as soil health and food.

IMPLEMENTATION AND OVERSIGHT

The success of this Strategy will depend on effective implementation and oversight. For this reason, a Monitoring and Implementation Framework is included. This highlights areas for collaboration and partnership within the sector but also with key external stakeholders. It also details oversight and monitoring mechanisms for implementation, including the establishment of a High Level Implementation Committee chaired by the Minister for Agriculture, Food and the Marine, and its key task will be to ensure the delivery of the four Missions. Specific monitoring requirements for environmental aspects are laid out, including the establishment of an Environmental Working Group. This Group will enable the environmental performance of the Strategy to be monitored and evaluated and allow any negative

trends to be identified early and remedial action and responsibilities to be determined. It will also provide for increased transparency during implementation. A more detailed plan with the actions and their owners, deliverables and timeline for implementation is published separately, as is the Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA).

GOALS AND INDICATORS

The vision of this Strategy is for Ireland to be a world leader in Sustainable Food Systems. This Strategy outlines four missions and twenty-two goals, which if achieved, will position Ireland as a world leader in Sustainable Food Systems. It includes some 200 actions to achieve these goals and missions, and alignment between the goals and relevant SDGs has been indicated throughout the Strategy. As well as monitoring the implementation of these actions, the High-Level Implementation Committee for the Strategy, will consider and review the performance of the agri-food sector according to an agreed set of indicators.

While the Strategy provides the vision and missions to facilitate a transformation to a sustainable food system, it should not be seen as a final or definitive roadmap. It is a framework within which more detailed plans and processes will need to be developed. National and international policy developments will also be important and the Strategy should be seen in that context, as the beginning of the pathway to the vision of a more sustainable food system.

As yet there is no internationally agreed set of indicators for Sustainable Food Systems, although

these may emerge in the future. The Committee has therefore identified the goals associated with each Mission, as well as the key indicators which will be used to track progress. The Committee has also outlined what progress by 2030 will look like.

MISSION 1

A CLIMATE SMART, ENVIRONMENTALLY SUSTAINABLE AGRI-FOOD SECTOR

Goal: A Climate-neutral food system by 2050, with verifiable progress achieved by 2030, encompassing emissions reductions, carbon sequestration, air, biodiversity and water quality.

Key indicators:

- Biogenic methane level
- Ammonia and Nitrous Oxide emissions
- Water quality
- Biodiversity – land and sea
- Afforestation level
- Level of organic farming
- Food Waste statistics
- Enhanced Origin Green Programme

PROGRESS BY 2030

The Committee acknowledges that in general, future environmental targets are likely to be set by legislation and commits to participating in the various target-setting processes with a view to the ultimate commitment to be climate neutral by 2050.

Biogenic methane: The Strategy commits to a reduction of at least 10% by 2030 (on 2018 level), recognising that this will need to adjust in line with emerging national and international targets for the sector and in line with the development of scientific solutions.

The target for biogenic methane will be updated when specific sectoral targets are agreed under the framework of the Climate Action and Low Carbon Development (Amendment) Bill 2021.

Nitrous Oxide: Emissions associated with chemical fertiliser use to reduce by more than 50% by 2030

Water Quality: The Strategy commits to reduce nutrient losses from agriculture to water by 50% by 2030

Biodiversity: It is envisaged that by 2030, 10% of farmed area will be prioritised for biodiversity, spread across all farms throughout the country

Air Quality: Ammonia emissions to reduce to 5% below 2005 levels by 2030

Forestry: Increase afforestation from existing levels to at least 8,000 ha per year and double the sustainable production of biomass from forests to 2 million tonnes by 2035

Organic farming: At least 7.5% of utilisable agricultural area is targeted to be farmed organically by 2030

Seafood: Achieve 30% of marine protected areas by 2030

Food Waste: The Strategy aims to halve the level of food waste per person by 2030

Origin Green Programme: Achieve a high participation rate by both primary producers and the food industry in an enhanced Origin Green programme,

Note: *Ag Climatise has already set additional targets relating to chemical nitrogen use, abatement through LULUCF, the management of peat soils, genotyping, milk recording, slurry application, slurry stores, protected fertilisers and renewable energy.*



MISSION 2

VIABLE AND RESILIENT PRIMARY PRODUCERS WITH ENHANCED WELLBEING

Goal: Competitive, productive primary producers with improved economic and social sustainability.

Key indicators:

- Family Farm Income (Family Farm Income per hectare)
- Economic Sustainability of farm business
- Economic return to land (Gross output per hectare) and Profitability (Market-based gross margin per hectare)
- Economic performance of the Seafood sector (as reported by BIM 'The Business of Seafood')
- Total primary output and output by sector
- Formal agricultural education
- Age Profile
- Number of new entrants
- Number of farm families
- Isolation risk
- Health and Safety statistics
- Market transparency

PROGRESS BY 2030

The Strategy is ambitious for primary producers, envisaging an upward trend in Family Farm Income towards 2030, with an increased share of viable and sustainable farms, reflecting improved economic returns to land and profitability per hectare, an upward trend in primary output value with increased diversification across sectors. The Strategy also foresees the seafood sector continuing on a path of sustainable economic and environmental development by carefully managing the utilisation of sea-fisheries and aquaculture.

The Strategy aims to improve the social sustainability of primary producers, increasing the share of younger and trained farmers and fishers, reducing the risk of social isolation, and ensuring a much improved record on health and safety.





MISSION 3

FOOD WHICH IS SAFE, NUTRITIOUS AND APPEALING, TRUSTED AND VALUED AT HOME AND ABROAD

Goal: Coherence of policies for food, health and nutrition; Enhancement of consumer trust through providing evidence of safe and ethical food production; Creation of value-add, through insight and innovation, supporting the food sector and continuing to develop market opportunities at home and abroad.

Key indicators:

- Development of coherent national and international food, health and nutrition initiatives
- Enhanced food safety, animal health and welfare
- Value and value-added in the agri-food sector
- Value of agri-food exports

PROGRESS BY 2030

The Strategy aims for an integrated food systems approach to food and health policy.

Continued world-class standards in food safety, animal health and welfare.

Increased value-addition, and an increase in the value of agri-food exports to €21billion by 2030, built on sustainable steady value growth.



MISSION 4

AN INNOVATIVE, COMPETITIVE AND RESILIENT AGRI-FOOD SECTOR, DRIVEN BY TECHNOLOGY AND TALENT

Goal: An innovation, knowledge and technology driven sector; with improved competitiveness and resilience along the food chain; and the attraction and nurturing of diverse talent.

Key indicators:

- Level of implementation of the recommendations of the High-Level Innovation Team
- Level of private R&D
- Availability of public policy supports, including R&D, access to finance and on competitiveness issues specific to the agri-food sector.
- Development and implementation of a strategy for the agri-food sector on education, skills and talent attraction and retention.
- Promotion of food and nutrition security, and SFSs, as an important part of delivering on Ireland's ambition of achieving the UN aid target of 0.7% of GNI by 2030

PROGRESS BY 2030

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

Ireland will advocate for Sustainable Food Systems internationally and for the development of a recognised SFS measurement or index to supplement and strengthen its vision for 2030.

Ireland's advocacy that SFSs are an important part of the deepening strategic relationship between Africa and the EU, and within Ireland's overall relationship with Africa.



INTRODUCTION AND CONTEXT



For the purposes of this Strategy, the agri-food sector includes primary agriculture; food and drink processing and manufacturing; fisheries, aquaculture and fish processing; forestry and forestry processing; and the equine sector. The sector has benefited from an approach to strategic planning involving the development of ten-year stakeholder-led strategies, updated every five years. Since their inception twenty years ago, up to the current Food Wise 2025 plan, these strategies have provided the sector with a coherent, stakeholder-led vision, to underpin its continued development. The first of these was published in 2000, when Ireland's agri-food exports were valued at €7.4 billion. In 2020, exports reached €14.2 billion.

In November 2019, a committee of stakeholders in the agri-food sector, chaired by Tom Arnold, was established. Its terms of reference required it to outline the vision and key objectives, with associated actions, to ensure the economic, environmental and social sustainability of the agri-food sector in the decade ahead. The Committee met throughout 2020 and into 2021 and has finalised its strategy. This section outlines the background against which the deliberations of the Committee have taken place.

Early in the process, the Committee agreed to adopt a food systems approach. This involved consideration not only of the issues affecting the sector directly, but also its connection to people (nutrition and well-being) and the environment. The Food and Agriculture Organization of the United Nations (FAO) indicate that food systems encompass the entire range of actors and their interlinked value-adding activities involved in the production, aggregation, processing, distribution, consumption and disposal of food products that originate from agriculture, forestry or fisheries, and parts of the broader economic, societal and natural environments in which they are embedded. The

food system is composed of subsystems (e.g. farming system, waste management system, input supply system, etc.) and interacts with other key systems (e.g., energy system, trade system, health system, etc.). The FAO goes on to define a food systems approach in this way:

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. This means that:

- *It is profitable throughout (economic sustainability);*
- *It has broad-based benefits for society (social sustainability); and*
- *It has a positive or neutral impact on the natural environment (environmental sustainability).*

THE AGRI-FOOD SECTOR IN 2020

The Irish agri-food sector is Ireland's oldest and largest indigenous industry. In 2020, the sector accounted for almost 7% of GNI* and 9% of exports in value terms. It employs approximately 163,600 people, representing 7.1% of total employment. At primary production level, some 137,500 farms, over 770,000 hectares of forest, over 2,000 fishing vessels and some 180 aquaculture sites produced an estimated €8.5 billion in output in 2019. Outside of Dublin and the mid-east region, the sector provides between 10% and 14% of employment. Beyond direct employment, the sector plays a key role in the wider rural and coastal economy. Estimates for output multipliers range from around 2.5 for beef, to 2.0 for dairy and food processing and 1.75 for seafood, compared with an average output multiplier of 1.4 for the rest of the economy and 1.2 for foreign owned firms. The Food & Drink sector accounts for approximately 40% of all export sales by Irish-owned companies.

The agri-food sector grew substantially over the past decade, with Irish food and drink exports increasing by 60% from €8.9 billion in 2010 to over €14.2 billion in 2020, despite difficulties in the wider economy earlier in the decade.

THE IMPORTANCE OF PRIMARY PRODUCERS

Primary producers, including farmers, fishers and foresters, are at the heart of the agri-food system. They contribute to the economic, environmental and social fabric of Ireland, particularly in rural and coastal areas. Without them, the agri-food system would not exist, and it is therefore essential that their viability and well-being are considered and addressed in this strategy.

Family farm income varies considerably by farm type (e.g. dairy, drystock, tillage, horticulture, poultry, pigs) and whether full-time or part-time. There are wide variations in productivity and performance (economic and environmental) between the top, middle and bottom farms across a range of indicators. In terms of income and viability of primary producers, output price, costs and productivity are significant factors. Measures to improve farm efficiency, to reduce input costs, to develop diversification options and to strengthen the position of primary producers in the supply chain, can all play a critical role in improving farm viability.

National and EU support payments are also a significant component of farm income for many farmers, particularly drystock farms. The evolution of direct supports, particularly as CAP moves towards a 'results-based' system with a strong focus on environmental performance, will have significant

implications for farm incomes. Although there are many farms with low output, their cumulative output is economically important, as are the environmental and social benefits they provide.

Seafood primary production is primarily made up of capture fisheries and aquaculture production. The seafood sector is a primary driver of rural economies around the coastline of Ireland. It acts as an anchor in these locations around which other supporting service sectors develop. Due to low productivity agricultural land, distance from urban settlements, low levels of transport connectivity and lack of alternative industry, these areas are often highly dependent on the seafood sector.

The area under forestry in Ireland is estimated to be 11% of the total land area. Of the total forest area, half is in public ownership, mainly by Coillte. The forest estate is comprised of three quarters conifers and one quarter broadleaves. Farmers have accounted for 81% of private lands afforested between 1980 and 2019. Since 1980, over 23,000 private landowners have received grant aid to establish forests, along with premia for their upkeep, and the average size of private grant-aided afforestation since 1980 is 8.6 ha. Government targets for annual forestry planting have not been met, despite significant public funding support and tax-free profits on forest harvesting. The development of a new forestry strategy will be critical if the sector is to maximise its potential contribution to the economy and to rural communities.

When it comes to developing a long term sustainable future for primary producers, addressing generational renewal and gender balance will be essential, to ensure that the vital contribution of young people and women

is acknowledged and supported. Initiatives to support primary producers participating in life-long learning, improvement in farm safety and participation in wider rural development and community well-being, also need to be considered.

THE FOOD AND DRINK SECTOR

The food and drink processing and manufacturing sector is made up of a range of small, medium and large Irish-owned enterprises, estimated at some 1,800 in number, some of which are among the most advanced in the world.

It includes manufacturers of dairy and specialised nutrition products and ingredients, meat and meat products, prepared consumer foods and drinks. It is Ireland's largest indigenous exporting sector, accounting for over a quarter of employment of Irish-owned exporting firms and 38% of total indigenous exports. The last decade has seen a continued move up the value chain and increased exports to a greater number of markets. Between 2010 and 2020, the value of agri-food exports increased by 60% to €14.2 billion. Irish food and drinks are now exported to 180 markets worldwide. During this period there was a 38% growth in exports to the UK and a 59% growth to the EU-26. However, the most rapid growth (121%) was seen in exports to international markets outside of Europe.

The continued development of the sector to 2030 will depend on a continued focus on competitiveness and innovation, but also on an understanding of market dynamics, a consumer orientation and an alignment with societal expectations in relation to issues such as climate change, animal welfare, and the links between food and health.

CASE STUDY: THE UN DECADE OF FAMILY FARMING 2019-2028 (UNDFE)



The UNDFE aims to shed new light on what it means to be a family farmer in a rapidly changing world. Family farming offers a unique opportunity to ensure food security, improve livelihoods, better manage natural resources, protect the environment and achieve sustainable development. Thanks to their knowledge and guardianship of the land, family farmers are the agents of change needed to achieve a more balanced and resilient planet and the Sustainable Development Goals (SDGs) in an inclusive, collaborative and coherent way.

Key data on family farming shows that they occupy around 70 - 80% of farmland worldwide; 90% of farms are run by an individual or a family who rely primarily on family labour; and women hold only 15% of farmland yet provide almost 50% of farm labour.

Through a Global Action Plan (GAP), the UNDFE provides detailed guidance for the international community on collective, coherent and comprehensive actions that can be taken to support family farmers. These are designed around mutually reinforcing pillars such as developing an enabling policy environment to strengthen family farming, ensuring the generational sustainability of family farming, promoting gender equity, strengthening family farmers' organisations and capacities to generate knowledge, improving socio-economic inclusion, resilience and well-being, promoting sustainability for climate-resilient food systems and promoting social innovations that safeguard biodiversity, environment and culture.



BOX 1: MARKET ACCESS AND MARKET DEVELOPMENT 2010-2020

Trade missions play a key role in market and trade advancement. The Department of Agriculture Food and the Marine plans these missions in collaboration with Bord Bia, Enterprise Ireland and the Department of Foreign Affairs and its Embassy network. Destinations are selected strategically and in keeping with the Bord Bia market prioritisation.

In addition to outward Ministerial trade missions, the Department hosts high level visiting delegations from a wide range of countries. In 2019 this included China, Japan, South Korea, USA, Mexico, Turkey, Egypt, Thailand, Qatar, Vietnam, and the UAE.

Market access

The Department’s market access work is focused on the opening of access for Irish exports to new third country markets. Notable successes in recent years have included beef access to China (2018), sheepmeat access to Japan (2019) and pigmeat access to Mexico (2020). Equally important is the challenging work of enhancing and retaining access to existing international markets, for

2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
China	Algeria	China	Gulf States	China	Ghana and Nigeria	China	Gulf States	Canada	China X2	Algeria
	China	USA	Japan	USA	Italy	Singapore	Japan	China X2	Germany	Egypt
					USA X2	South Korea	Mexico	Indonesia	Japan	Indonesia**
						Vietnam	South Korea	Malaysia	Netherlands	Malaysia**
							USA	Turkey	Portugal*	Philippines**
								United Kingdom*	South Korea	Thailand**
								USA	Spain*	United Kingdom**
								Vietnam*	Turkey	Vietnam**
									United Kingdom	

Trade Missions 2010 - 2020

* These trade missions took place during the St. Patrick’s Day visit

** Virtual Trade Missions due to COVID-19 restrictions

example through regular renegotiation of dairy export certificates with third country authorities. This work involves hosting audit and inspection visits from the competent authorities in international markets and conducting technical missions to negotiate on details of market access to those markets. The Department’s

market access endeavours involve work at political, diplomatic, administrative and technical levels. Ireland’s success in gaining and retaining access to international markets is directly related to Ireland’s excellent reputation for food safety and our enviable national herd health status.

Top Ten Agri-food Export Destinations Outside Europe 2020



Source: Central Statistics Office, Trade Statistics 2020.

In 2020, two of the five most valuable destination markets for Irish food – the USA and China – were non-Europe markets. Likewise, nine out of the top twenty markets for Irish agri-exports were non-Europe markets. These facts underline the importance of finding and growing new export markets for the future prospects of the Irish agri-food industry. The EU has, in recent years, concluded Free Trade Agreements with several Asian and American countries and these agreements are very important to Ireland, given our status as a small, open economy where access to new markets historically has been a big driver of economic development, particularly in the agri-food sector.

BROADER RURAL DEVELOPMENT CONTEXT

No strategy for the development of the agri food sector would be complete without consideration of its particular impact on the rural economy, and its critical place within a broader rural development strategy. There is an increased understanding nationally and internationally that rural development is integrally linked to policies across a wide range of areas including spatial planning, enterprise growth, job creation, social cohesion, community development, public services, communications infrastructure, agriculture, food and the marine, climate adaptation, tourism, heritage, health and leisure.

The Government has produced a new rural development policy, “Our Rural Future 2021 to 2025”. It builds on and goes beyond the Action Plan for Rural Development 2017-2019 by adopting a more strategic, ambitious and holistic approach to investing in and maximising opportunities for rural areas. To achieve

a co-ordinated, multi-sectoral approach to rural development, Our Rural Future is a comprehensive policy, underpinned by a programme of commitments across Government Departments and agencies, which will support the economic and social progress of rural Ireland over the next five years and build a better quality of life for people who live there. The Department of Agriculture, Food and the Marine will work with the Department of Rural and Community Development and others, including the agri-food stakeholders, to deliver this framework for the economic and social development of rural areas over the next five years.

THE AMBITION TO 2030

Ireland has a strong international reputation as a supplier of quality, safe, nutritious and sustainably produced food and drink. International consumers seek out Irish food and drink products in what is a very competitive international market. Building on this reputation will be a key factor in optimising the contribution of the agri food sector to the Irish economy and society. This will require a strong alignment with consumer and societal sentiment.

With this in mind, the most recent strategy, Food Wise 2025, sought to embed at all levels of the agri-food industry, the idea that environmental protection and economic competitiveness were equal and complementary. The Committee recognises that while progress has been made in terms of environmental efficiency per unit of output, the direction of travel in terms of absolute emissions, water quality and biodiversity is negative. The State of the Environment Report 2020 from the EPA highlighted the scale of the pressures that agriculture imposes on the

environment: on-farm agricultural practices accounted for a third of national GHG emissions in 2018, the sector is almost exclusively responsible for ammonia emissions, 30% of listed species have an inadequate or bad status while 85% of listed habitats have an unfavourable conservation status and agriculture and other activities are contributing to these trends, agriculture exerts the most pressure on water quality, impacting on just over half of water bodies at risk of not achieving their water quality objectives . The ambition to 2030 must be to ensure that plans for the development of the sector align with the need to reduce absolute emissions, reverse the decline in water quality and improve biodiversity.

The Committee also recognises that progress on this ambition can only be achieved through partnership between stakeholders, and that the long term sustainability of the sector will also depend on competitiveness and innovation, on its ability to attract the best and brightest people to work in it, and its ability to provide a decent living to its primary producers.

The ambition to 2030 therefore needs to be expressed across the three pillars of sustainability: environmental, economic and social.

THE PLACE OF IRISH AGRI-FOOD IN THE WORLD

GLOBAL DEMOGRAPHICS

World population is projected to grow from 7.8 billion in 2020 to 8.5 billion in 2030 and to 10 billion in 2050, with the bulk of the population increase to take place in Africa and Asia. The global population will also become, on average, older. The number of people defined as 'middle class' is increasing rapidly. The increase in population is accompanied by a continual trend towards urbanisation and the development of mega-cities. As per capita incomes have increased, diets have become more diversified, with increasing demand for protein. This changing demographic brings with it a number of challenges to the food system, with the need for nutritional solutions to both maintain and enhance quality of life increasingly important. A growing world population, in parallel with changing climate trends and increasingly frequent extreme weather events, pose continued threats to food security.

CONSUMER TRENDS

Trade customers and consumers are increasingly demanding credible evidence that food and ingredients are produced sustainably. Leading companies are working to ever higher Environmental, Social and Governance (ESG) standards. Consumer trends over the next decade will be dominated by factors such as health, diet and wellbeing, linked to food that is

safe, authentic, ethical and trustworthy. Demand is growing for more authentic, sustainably produced 'natural' food, as outlined in Bord Bia's 2019 Consumer Lifestyle Trends:

"Consumers want to eat, drink and live to optimise their body's systems, to feel better than well today and tomorrow".

The Irish agri-food sector needs to respond to these trends by investing in product development and positioning itself as a global leader in the production of natural, premium, sustainably-produced food. Ireland's largely grass-fed livestock production system already has a natural advantage in the marketplace, reflected in the Origin Green programme, but its credentials will be vulnerable to challenge if key environmental indicators are going in the wrong direction. Increased demand for meat and dairy alternatives, vegan or 'flexitarian' choices, offer positive opportunities to grow Ireland's horticulture and tillage sectors. The increasing global consumer trend towards premiumisation, and the associated consumer demand for authenticity (e.g. the geographic indication status of Irish whiskey and Irish cream liqueur) offer continuing strong opportunities for Irish drinks producers to grow exports and achieve greater value-added.

The increased use of technology by consumers, both for digital sales and to help them make informed decisions in relation to healthy sustainable diets, is also something the sector must take into account.



CASE STUDY:

DIAGEO 'SOCIETY 2030: SPIRIT OF PROGRESS'

BACKGROUND

In November 2020, Diageo announced a range of ambitious goals in its 'Society 2030: Spirit of Progress' plan, designed to make a positive impact on the world by 2030, in the 'Decade of Action' to achieve the United Nations Sustainable Development Goals (SDGs). This includes implementing sustainability measures in Ireland's largest brewery at St. James' Gate in Dublin.

Diageo will focus its action over the next ten years in three core areas, carefully selected to align with the SDGs, among them, pioneering grain-to-glass sustainability.

SUSTAINABILITY TARGETS

In Ireland, the Guinness brand will lead the implementation of Diageo's 2030 targets. The targets set out include: every drink produced will take 30% less water than it does today, packaging will be 100% reusable, recyclable or compostable, and production operations on the island of Ireland will become net climate neutral.

Additionally, the brands will also work in collaboration with farmers and those in its value chain to halve their indirect carbon emissions by 2030. Diageo Ireland also announced in September 2020 that the proposed Guinness Quarter development at St. James's Gate aims to be Dublin's first climate neutral district.

ACHIEVEMENTS

Across its Irish operations, Diageo demonstrated its commitment to sustainability with a massive focus on reducing its environmental footprint across carbon, water, and waste. Recent achievements include a 32% reduction in CO2 emissions and halving water usage at St James's Gate.





WORKING WITHIN PLANETARY BOUNDARIES

As an island nation, Ireland's green reputation has been built on its many natural geographical and climatic advantages. When coupled with a family-farm model, these features lead to a high degree of confidence in our food offering. The seas around Ireland have also led to the development of a thriving seafood sector which complements these land-based activities.

Good progress has been made in recent years by farmers, fishers, forest owners and the agri-food industry to work in collaboration on practical initiatives to improve a range of environmental metrics and this provides a good platform on which to build further progress. Political and legislative developments at international, European and national levels underscore the need for higher levels of environmental ambition - from the UN SDGs and Climate Protocols, to the European Green Deal, the 2030 Climate and Energy Framework, the EU Farm to Fork, Circular Economy and Biodiversity Strategies. Nationally, the 2020 Programme for Government, the Climate Action and Low Carbon Development Bill, and the Ag Climatise Strategy, complete a challenging agenda in this area.

These strategies reflect consumer demand for sustainably produced food and broader societal expectations that every sector will contribute to addressing the 'burning platforms' of climate and biodiversity crises. They also reflect the real threat that environmental degradation poses to food production systems and sustainable forestry and fisheries management. The reorientation of the CAP and CFP to support these ambitious goals offers an

opportunity to support primary producers in making the necessary changes.

In this context it is important to consider 'Just Transition' principles, which recognises primary producers as part of the solution to the climate challenge. For the Irish agri-food sector, a Just Transition will entail building socio-economic resilience through diversification; creating climate resilience through sectoral adaptation; and ensuring the dissemination of knowledge and uptake of best practices.

CASE STUDY:

FARM ZERO C – BIORBIC, BIOECONOMY SFI RESEARCH CENTRE

Carbery Group and its collaborators, led by Science Foundation Ireland BiOrbic bioeconomy research centre, have undertaken an interdisciplinary programme of scientific work as a direct response to the challenge of reducing greenhouse gas emissions and increasing the health and resilience of farms. Farm Zero C is attempting to achieve a new sustainable business model for farming to address the challenge of climate neutral farming. Carbery, based at Balineen in West Cork, will measure the carbon emissions and sequestration on the research and demonstration farm at Shinagh near Bandon, which is owned by the four West Cork Co-ops that make up Carbery. The Shinagh Farm is being used to test measures to reduce carbon output, and to implement carbon sequestration, to the extent that production is climate neutral. Carbery's Farm Zero C project includes grass bio-refining to improve the protein efficiency, value and sustainability of grasslands, with other measures targeting soil and multi-species grassland; animal diet and breeding; biodiversity; life cycle analysis and renewable energy. Once the proof of concept is in place, the opportunity to roll out the best practices to a large group of Carbery suppliers and even to the entire dairy farming sector in Ireland is considerable.



INTERNATIONAL AND LOCAL TRADE

The process of producing goods, from raw materials to finished products, is increasingly carried out wherever the necessary skills and materials are available at competitive cost and quality. As an exporting country, Ireland is highly embedded in these Global Value Chains (GVCs), including in agri-food.

Short supply chains can also offer advantages, but there is a need to balance these with today's globally interconnected and interdependent world. Renationalisation of production and supply chains can pose significant risks, including to food security. Short supply chains can complement GVCs but cannot replace them and therefore, a mix of both offers the most prudent approach to ensuring safe secure food supplies.

Ireland remains committed to open, global, rules-based trading which the agri-food sector has benefitted from. However, trade agreements must always be balanced, and must be based on thorough analysis and assessment.

BREXIT AND THE UK RELATIONSHIP

On the 24 December 2020, the EU-UK Trade and Cooperation Agreement was formally agreed. It was preceded by an Agreement on Withdrawal and a Protocol for Northern Ireland (NI). These agreements became applicable from 1 January 2021 as the UK officially exited the transition period. The agreements avoided the imposition of tariffs on goods traded to and from the United Kingdom. They also aligned NI to Single Market rules and the EU customs code, while allowing it remaining in the UK customs territory, and obviated the need for a hard border on the island of Ireland.

While the avoidance of tariffs was hugely significant for Ireland's agri food sector, the impact of customs and sanitary and phytosanitary checks (SPS), new certification requirements, and implications for rules of origin, add cost and delay to trade between the EU and the UK. The impact on the fisheries sector is particularly challenging as EU, and especially Irish fishers, rely to a significant extent on access to EU waters and quota share for their livelihoods. The agreement sets out a phased period where the transition to a new quota share will take place for certain stocks involving significant reductions, with an overall quota reduction for the EU fleet of 25%, with 60% of this reduction applying in 2021. The cost of the final quota transfer by Ireland will amount to 15% loss of the overall value, and significantly more for some species.

Notwithstanding these significant challenges, there will be opportunities to continue to develop and grow the British market. However, it is also crucial to continue the market diversification work that has been ongoing. Measures have been established to support farmers, fishers and businesses with Brexit-related preparedness.

The Minister for Agriculture, Food and the Marine has established a Seafood Sector Taskforce, involving seafood industry representatives and other stakeholders, to make recommendations on measures to mitigate the impacts of the fish quota share reductions, arising from the EU-UK Trade and Cooperation Agreement, on the Irish Fishing industry and on the coastal communities that depend on fisheries. In its interim report, published in June 2021, the Taskforce recommends that a voluntary tie-up scheme be put in place for the period September

to December for the approximately 220 polyvalent vessels and beam trawlers directly impacted by the quota transfers under the TCA. The interim report also recommends a range of initiatives to address the quota reductions in the TCA. These recommended actions will be considered further by the Taskforce and will be set down in detail in the Taskforce's main report.

THE ISLAND OF IRELAND

There is significant mutually-beneficial co-operation across the island of Ireland in respect of the agri-food sector. The North South Ministerial Council (NSMC) was established under the Good Friday Agreement to develop consultation, co-operation and action within the island on matters of mutual interest. Agriculture is one of the mandated areas of co-operation.

The All-Island Animal Health and Welfare Strategy facilitates cooperation across a range of areas including veterinary medicines, efforts to combat animal diseases, the exchange of data to facilitate the movement of bovine animals and contingency planning for animal diseases of national importance. In relation to plant health, a steering group oversees cooperation on areas of mutual interest across plant health and pesticides. This is especially important as the island is treated as a single epidemiological unit.

There is also good cooperation on research funding and interaction between DAFM & DAERA via InterTrade Ireland aimed at facilitating researchers to form consortia for funding applications

Co-operation also extends to the development of an All-Ireland Pollinator Plan, first in 2015, and a new version recently launched for 2021-2025.

A number of Irish food and drink sectors have operated with seamless cross-border supply chains. The Protocol on Ireland and Northern Ireland protects the all-island sectors and cross-border supply chains from tariffs and checks but other barriers to trade may emerge.

FOOD, NUTRITION AND HEALTH

Recognising the link between food and nutrition and the relationship between diet and health are crucial elements of a functioning food system.

Much progress has been made in the fight against hunger. However, while the percentage of the world's population suffering from undernourishment is declining, the goal of Zero Hunger (SDG 2) is not on track to be met by 2030, and there are also issues with micronutrient deficiencies, over-nutrition causing overweight and obesity, and lack of access to healthy food.

The Global Panel on Agriculture and Food Systems for Nutrition, in its 2020 Foresight 2.0 report, said regarding a healthy diet: *'While there is no single dietary pattern that delivers 'good health' in every society, there is broad agreement on what elements should be included in healthy or high-quality diets. They include a diversity of foods which are safe and provide energy and key nutrients of all kinds appropriate to age, sex, disease status and physical activity (i.e. nutrient-rich).* The Healthy Ireland Food Pyramid reflects these recommendations. The Global Panel is not promoting a single or universal diet. It seeks instead to promote policy actions across the entire food system to secure a high-quality diet for all.

Furthermore it recognises that different regions of the world have climates (temperatures, rainfall etc.) and soils which are more suitable for certain types of agriculture, for example pasture fed livestock, tillage or horticulture, and therefore that international trade is of importance in ensuring universal availability of both staples and nutrient-rich foods. Human health is also connected with planetary health and this is reflected in one of the guiding principles of the Committee on World Food Security 2021 Voluntary Guidelines on Food Systems and Nutrition which states *"Healthy and prosperous people, healthy planet: Promote policies and actions that enhance the livelihoods, health, and well-being of the population, as well as sustainable food production and responsible consumption of safe, diverse and nutritious foods to enable healthy diets and to protect and promote sustainable use of natural resources, biodiversity and ecosystems, and support mitigation and adaptation to climate change, as appropriate"*.

It is important that debate on the consumption and production of food and drink products is informed by good science and evidence. The positive role of animal sourced foods in diets is discussed in Box 2.

Initiatives under the Healthy Ireland framework, including the Healthy Ireland Food Pyramid, the National Obesity Strategy 2016, Healthy Eating Guidelines for One to Four Year Olds, the introduction of a sugar tax and progress within the sector on product reformulation have made positive contributions in this area. Informed by scientific evidence, these offer a solid foundation on which to make further progress on diet-related health issues, including childhood obesity and malnutrition in the elderly.

Ensuring the safety, integrity and authenticity of the food chain is also essential to protecting consumers' health. Ireland enjoys a strong reputation for food safety, and this is an essential pre-requisite for trade. Food business operators are aware that they have primary responsibility for the safety and authenticity of the food they produce, and that compliance with standards is verified by a robust and transparent food safety controls system. However, there is a need for continuous investment and improvement to make the food system more robust in order to minimise and manage risk. A key component is data and the evidence to underpin assertions of food safety and food authenticity and the technological innovation to deliver this.

At international level, a number of policy approaches towards public health have emerged. The WHO has developed its 'One Health' policy, to design and implement programmes, policies, legislation and research, in which multiple sectors work together to achieve better public health outcomes. "One Health, One Welfare" captures the relationship between human health and animal health - particularly the threat posed, both by AMR (antimicrobial resistance), and by zoonoses (diseases which can be passed from animals to humans). It recognises the relationship between human well-being and animal welfare, particularly the inter-dependencies between animals and the people who care for them, but also the attitude of consumers towards the animal welfare aspects of food production systems.

Ireland has a good animal disease and health status, based in the first instance on our island location, but supported by significant public-private investment in disease control and eradication, and the husbandry

BOX 2: THE ROLE OF ANIMAL-SOURCED FOODS IN DIETS

Animal-Sourced Foods are nutrient-rich foods.

They contribute to a large proportion of key nutrients in the diets of children, adolescents, and adults, in Ireland and elsewhere. In addition to being a source of high-biological value protein, many essential health promoting micronutrients (vitamins A, riboflavin, niacin, B6, B12 and D, calcium, iron, zinc, iodine and selenium, and long-chain omega-3 polyunsaturated fatty acids [PUFAs]), are either most efficiently, or only, included in the human diet, through moderate consumption of animal-sourced foods. High quality protein intake is important for muscle growth and maintenance - dairy and meat food sources contribute to over 50% of Irish protein intakes. Calcium and vitamin D are vital for bone development during childhood and adolescents - meat and dairy food sources contribute approximately 50% of calcium and 40% of vitamin D intakes in Irish children. Iodine is crucial at all stages of life but is imperative during pregnancy and early childhood for fetal brain development and neurodevelopment respectively. Milk is a major source of iodine in Ireland contributing 45-65% to intake in adults and children.

Impact of Dietary Deficiencies in Animal-Sourced Foods on Children. Ireland's National Children's Food Survey 2017-2018 found that significant numbers of children have inadequate intakes of vitamin D, calcium, iron and folate and that an appropriate

intake of milk, fortified milk and meat could address these inadequacies. Worldwide, countries with the lowest dietary intakes of meat, dairy and fish, have the highest rates of childhood stunting - the prevalence of stunting in children under the age of 5 years is greater than 30% in India and in many Sub-Saharan African countries, whereas the prevalence in Ireland and Europe is less than 2.5%.

Many of the recently developed **Novel Plant-Based Meat and Dairy Alternatives**, designed to mimic the sensory experience of meat and dairy, can be calorie, sugar and salt rich, and some only contain a fraction of the protein content of animal-sourced foods. Furthermore, the mimicking of animal foods using isolated plant proteins, fats, vitamins, and minerals likely underestimates the true nutritional complexity of whole foods in their natural state, which contain hundreds to thousands of nutrients that impact human health. Hence the current consensus is that these novel plant-based products should only be treated as meat and dairy alternatives in terms of sensory experience, but not as true replacements in terms of nutrition.

Dietary Excesses and Deficiencies and the Causation of Non-Communicable Diseases. In 2017, excessive calorie intake (5 million deaths and 148 million disability-adjusted life-years, [DALYs]) and diets high in salt (3 million deaths and 70 million DALYs) were the leading dietary causes of

deaths and disease burden globally. In contrast to those large numbers, the deleterious effects of an excessive intake of red meat (25 thousand deaths and 1 million DALYs) were relatively small. It is also noteworthy that iron deficiency anaemia, which can in large part be prevented by moderate consumption of red meat haem-iron, was responsible for considerably more disease burden (60 thousand deaths and 34 million DALYs). Worldwide, we are not eating enough dairy foods nor enough oily fish - diets low in milk and in seafood-derived omega-3 PUFAs caused 126 thousand and 1.5 million deaths, respectively, and 2.7 million and 32 million DALYs respectively.

In Conclusion, animal sourced foods are nutrient rich. Reducing or removing them from the diet would have substantial negative health implications. Therefore, consumption of meat, dairy, seafood and eggs, in appropriate evidence-based quantities, will continue to be included in the official advice and guidelines for a healthy, balanced diet.



CASE STUDY:

SELECTIVE DRY COW THERAPY TO REDUCE THE DEVELOPMENT AND SPREAD OF ANTIMICROBIAL RESISTANCE



Eoghan McCarthy, a dairy farmer from Co Kerry with a herd of 120 dairy cows, has moved towards the use of selective dry cow therapy in recent years. His concerns with regard to reducing the use of antibiotics in his animals increased as he became aware of the public health challenge of antimicrobial resistance. He stopped the use of blanket dry cow therapy in his herd, as well as working to prevent disease, and improve the overall health of the animals on his farm, in consultation with his veterinary practitioner. Eoghan recognised the importance of responsible use of antibiotics, and both the health and economic benefits of reducing his antibiotic usage overall. He developed a herd health plan with his veterinary practitioner, with a focus on vaccination for certain diseases that were impacting on this overall productivity. He gradually moved over to selective dry cow therapy and is now using teat sealer only in 60% of his herd. His experience with selective dry cow therapy has been very positive, but his use of monthly milk recording has been essential to this. The use of the milk recording data and his hygiene practices both at milking and generally on farm have allowed him to maintain an exceptional somatic cell count for his herd of 80,000 cells/ml. Eoghan recognises the importance of biosecurity, and breeds all his own replacements to minimise the introduction of disease into the herd.

His minimal use of antibiotics on his farm, the reduction in use of dry cow tubes, and in particular the use of highest priority critically important antibiotics, found in some of these dry cow tubes highlights what can be done. Dairy farmers like Eoghan recognise the important role they have in the production of safe nutritious food in sustainable way that addresses the One Health concern of antimicrobial resistance.



The McCarthy Family



competence on Irish farms. However, new threats are emerging on an ongoing basis, arising for example from the impact of climate change (e.g. exotic diseases and pests moving into Europe) and connectivity (e.g. new diseases being introduced through transport linkages). AMR is a human health threat, arising from the over-use of antibiotics to treat human and animal diseases. Improving animal health while minimising the use of antibiotics is an essential contribution which Ireland's food system can make to address this threat.

INNOVATION, COMPETITIVENESS AND HUMAN CAPITAL

The Irish food system needs to be innovative, responsive to scientific & technological development, competitive and resilient. The skills and talent of the people working in the sector are crucial.

INNOVATION

Innovation is widely recognised by the OECD as the main driver of long-term sustainable growth. The Bord Bia Readiness Radar Report showed that over 70% of businesses consider insight and innovation to be a very high or high priority for their future success. The ability of our agri-food sector to innovate will also be of critical importance in dealing with the challenges of economic and environmental sustainability and resilience. An effective innovation system is one of the key enablers.

SCIENTIFIC & TECHNOLOGICAL DEVELOPMENT

Existing and emerging technologies, including nature and biobased solutions, present significant opportunities. Technological innovation and precision agriculture have the potential to improve the productivity, quality and sustainability of current agri-food systems (e.g. satellites, sensors, drones, robots). Other technologies, such as big data, machine learning, biorefining, and nature based approaches, could bring about fundamental shifts that would dramatically alter how we produce, source, process, package, distribute, market & retail food and biobased products and how we manage waste. These technologies will also be key to advancing circular agriculture and the bioeconomy. Digitalisation is creating unprecedented amounts of data and opening up opportunities for the development of public and private sector data-driven decision making.

COMPETITIVENESS AND RESILIENCE

The National Competitiveness and Productivity Council has stated that while Ireland's overall competitiveness performance is in the top twenty percent globally, in some key areas the country is not performing well, most particularly in relation to the environment, broadband coverage, digital skills, and the productivity of the SME sector. It says that dealing with these competitiveness weaknesses will be paramount to achieving a sustainable and balanced recovery in a period of heightened global uncertainty. Factors influencing the competitiveness and resilience of the agri-food sector include responsiveness to market signals, the ability to develop and attract new

skills and talent, the development of scale, investment in innovation, access to finance and liquidity, the reduction of business operating costs, enhanced productivity, and the overall business environment.

SKILLS & TALENT

Attracting and retaining trained and skilled workers is an ongoing challenge for businesses right across the agri-food sector. The Bord Bia Readiness Radar Report 2020 found that agri-food companies consider talent to be as critical a risk as sustainability. Talent is generally a scarce resource and the agri-food sector is competing with all other sectors of the economy to attract and retain that talent. This affects roles across all skill levels. While there may be potential for certain lower-skilled, lower-paid and repetitive roles to be automated, this requires significant research, development and investment in technology.

THE POLICY ENVIRONMENT

INTERNATIONAL POLICY

- **The UN Sustainable Development Goals**
The UN Sustainable Development Goals (SDGs) set out a vision and blueprint for a safer, fairer, more prosperous and sustainable world by 2030. Of the seventeen SDGs, nearly all link either directly or indirectly to the food system, e.g., SDG2 (food security) and SDG8 (decent work and economic growth), while others such as SDG12 (responsible consumption and production), SDG13 (climate action), SDG14 (life below water) and SDG15 (life on land) relate directly to environmental sustainability. The SDGs are indivisible and universal – they belong to everyone, in every community, in every country across the world including Ireland. As a result, there is an onus on us to conceive, develop and implement policies that address these goals, including agri-food policy.
- **The Paris Climate Agreement**
The Paris Agreement is a legally binding international treaty on climate change adopted by 196 Parties at COP 21 in December 2015. Its goal is to limit global warming to well below 2°C, and preferably to 1.5°C, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to reach global peaking of greenhouse gas emissions as soon as possible to achieve a climate neutral world by mid-century. The Agreement also aims to enhance adaptive capacity and foster climate resilience and low-emission

development in a manner that does not threaten food production.

- **The UN Food Systems Summit (FSS) 2021**
The FSS has been convened by the UN Secretary General to highlight the important role food systems must play if the SDGs are to be achieved by 2030. The Summit will pursue five specific objectives: ensuring access to safe and nutritious food for all; shifting to sustainable consumption patterns; boosting nature-positive production at sufficient scale; advancing equitable livelihoods and value distribution; and building resilience to vulnerabilities, shocks and stresses. Ireland intends to play an active role in the FSS and has developed a whole-of-government strategic approach to its engagement with the Summit. The development of this Strategy using a food systems approach will be of particular interest and relevance to the FSS.

EUROPEAN POLICY

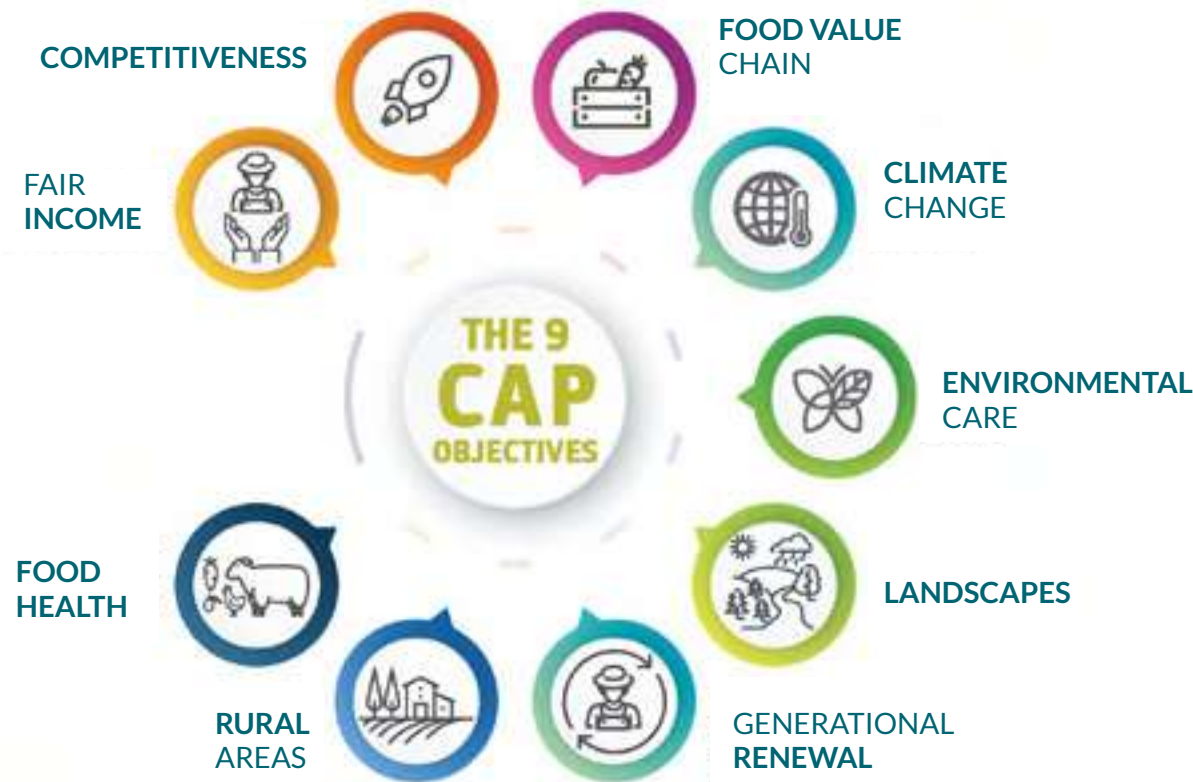
- **The EU Green Deal, Farm to Fork, Circular Economy and Biodiversity Strategies**
At EU level, the European Green Deal (EGD) represents a fundamental political and policy commitment towards Europe becoming the first climate-neutral continent by 2050. The EGD has led to the development of a number of important initiatives, including the EU Circular Economy Action Plan and the Farm to Fork (F2F) Strategy. The F2F Strategy is at the heart of the EGD: it addresses the challenges of sustainable food systems and recognises the links between healthy people, healthy societies and a healthy planet. It is also central to the EU's achievement of the UN SDGs.

The Farm to Fork and Biodiversity Strategies have laid out stretch targets for the EU as a whole around areas such as fertiliser & pesticide use, organic farming, circular bioeconomy and increasing afforestation. Taken together, they will require very significant change in how we farm and fish, manage our forests and how we process, distribute and consume food and bio-based products and manage waste.

- **The Common Agricultural Policy**
The Common Agricultural Policy (CAP) delivers important benefits to Ireland. It contributes to the delivery of public goods through more than 137,500 Irish farms who manage approximately 4.9m hectares of land or 70% of Ireland's land area, delivering positive outcomes for landscape, climate change, biodiversity and water quality. In 2019 CAP supports accounted for 78% of Family Farm Income in Ireland with an average total direct payment of €18,325 per farm.

Legislative proposals on the Common Agricultural Policy (CAP) for the period to 2027 continue to be considered. The proposals aim to ensure that the CAP can continue to provide strong support for European farming, the production of high-quality food and a range of eco system services. The proposals will also support the objectives of the European Green Deal. Higher environmental ambition in the new CAP will be delivered through increased conditionality for direct payments and a dedicated eco scheme in Pillar 1 (income support) with at least 30% of Pillar 2 funding (formerly the rural development programme) directed at environmental objectives. At national level these objectives will be delivered through a CAP

COMMON AGRICULTURAL POLICY OBJECTIVES



National Strategic Plan to be approved by the EU Commission, that will take national specificities into account.

- **The Common Fisheries Policy**

The Common Fisheries Policy (CFP) is a set of rules for managing European fishing fleets and for conserving fish stocks. The overarching goal of the CFP is to ensure that fishing and aquaculture are environmentally, economically and socially sustainable. Designed to manage a common resource, it gives all European fishing fleets equal access to EU waters and fishing grounds, subject to allocated fish quotas, and allows fishermen to compete fairly. The CFP provides the framework for the long-term conservation and sustainability of fish stocks and is designed to ensure the long-term sustainability of fishing in Irish and throughout EU waters.

The current CFP came into force on 1 January 2014 following an extensive reform process. Some of the main elements of the CFP include: the discard ban or landing obligation, which aims to eliminate the wasteful and unsustainable practice of discarding; the establishment of regional decision-making arrangements; and the setting of Total Allowable Catches (TACs) and quotas to deliver Maximum Sustainable Yield, which is the level that allows the highest catch of fish while keeping stocks sustainable in the long term. For 2020, 62 out of the 78 TACs discussed at the 2019 December Fisheries Council were set at or below the level of Maximum Sustainable Yield (MSY). In 2009, only 5 stocks were fished at MSY. This is a significant achievement and Ireland will continue to work with stakeholders, Member States and the Commission to build on this tangible progress to secure a

sustainable future for our seafood sector and the coastal communities which depend upon it.

The CFP is reviewed every 10 years and the next review is scheduled to be completed by 31 December 2022 when the European Commission will report to the European Parliament and the Council on the functioning of the CFP. When the report has been presented, if any changes are required, the Commission will bring forward a proposal for an amendment of the CFP Regulation. Ireland will be seeking that the upcoming review of the CFP must address the disproportionate impact on the Irish fishing industry by Brexit, as recommended in the interim report of the Seafood Sector Taskforce.

COVID-19 AND THE RESILIENCE OF AGRI-FOOD

The emergence of the COVID-19 pandemic touched all aspects of humanity and all sectors of society and the economy, including agri-food. The sector, which is obviously critical to maintaining food supply chains, from farm inputs to retail distribution, demonstrated its resilience. Activity within the sector was deemed essential and there was very little disruption to production. The pandemic has underlined the importance of a robust and resilient food system that functions in all circumstances and is capable of ensuring access to a sufficient supply of safe, affordable food for citizens.

Overall, the impact of the pandemic on food markets has been limited thanks to this resilience in the food chain. This is evident when considering agri-food exports in 2020. Despite the disruptions to supply and demand caused by COVID-19 total agri-food exports are estimated at €14.2 billion for 2020, compared to €14.6 billion the previous year, a reduction of 3% overall, although the impact was more pronounced for certain sectors. This is a remarkable achievement considering the challenges food and drink producers faced since March 2020, including the shutdown of the food services sector across Europe and beyond.

There are lessons from the pandemic for the agri-food sector and new trends that need to be considered. There has been an increase in use of e-commerce and digital platforms and an increase in consumer focus on food safety and more demand in some instances for locally produced food. However, experience so far shows the importance of an open and predictable international trade environment to ensure food can move to where it is needed. The biggest risk for food security is not with food availability but with consumers' access to food: safety nets are essential to avoid an increase in hunger and food insecurity. The pandemic has also highlighted the critical role that essential workers, including those across the agri-food supply chain, play in our economy, society and our day to day lives, and greater consideration is needed of their working conditions. Despite the relative success in navigating the pandemic, strengthening the resilience of the sector, including better risk management at all levels, remains a challenge. The pandemic provides an opportunity to learn more about vulnerabilities in the food system in order to identify necessary reforms to help build back better.

CURRENT ECONOMIC OUTLOOK

The OECD has stated that after dropping by 4.7% in 2020, global GDP is expected to rebound in 2021-22 and level-off at an annual rate of 2.9% by 2030 and that the world economy should recover to its pre COVID-19 level by 2022. However, the path of recovery is likely to be uneven across countries and regions. It predicts that global growth will be mainly driven by Asia, where India is projected to experience the highest growth at 6.7% p.a. over the next decade and that China, one of the rare countries that recorded positive GDP growth in 2020, is projected to grow at an annual rate of 5.5% over the next ten years. In North America and Europe, GDP growth is projected to be more moderate, at 2% pa and 1.6% pa, respectively.

For Ireland, the ESRI forecasts a return to growth for 2021, assuming vaccines will be widely available over the second half of the year.

CASE STUDY: DIRECT SELLING TO CONSUMERS, REBEL CITY DISTILLERY



COVID-19 has had various impacts on the food, drink and horticulture industry, including changes to shopper behaviour, with 17% of consumers doing their grocery shopping online more often and 49% expecting to continue to do more in the future (Bord Bia, 2020). The pandemic has resulted in major consequences for the industry, requiring businesses to make swift and radical changes in order to survive.

Rebel City Distillery is the first new distillery in Cork City in almost fifty years. The distillery's first release, Maharani Gin was due to launch in March 2020 in high-end restaurants and bars around the country. However, right before launch, Ireland went into lockdown and the business was forced to dramatically rethink its strategy if Maharani was to succeed.

With all on-trade establishments closed, Maharani launched 'virtually', through online stockists and via local off-licences. Recognising the growth in online shopping, the company identified the opportunity to sell direct to consumers and quickly launched their own online store. After developing a digital marketing strategy, the team focused on up skilling their

e-commerce capabilities. To drive traffic and generate sales on their online store, they invested in social media advertising and Google Search Campaigns. Best practice e-commerce techniques such as free delivery promotions and bundled product offerings were also implemented.

On account of the businesses agile response and move to direct to consumer selling, Maharani Gin has enjoyed continued growth both online and offline. In addition to the Rebel City online store, Maharani is now available in 70 stockists nationwide and recently secured its first international listing with Century Wines, Singapore.

Rebel City's founder Robert Barrett said *"when first devising our route to market, we never could have foreseen COVID-19. Although the pandemic has brought many challenges, we've innovated and adapted in ways we couldn't have imagined. We didn't intend to sell online so soon, but this has allowed us to connect directly with our consumers and build a valuable relationship with them from the outset. We have exciting new products in the pipeline and with our online shop we'll be able to launch these in market quicker than ever before."*

Robert and Bhagya Barrett, co-founders of Rebel City Distillery



STRATEGIC VISION AND STRUCTURE



The work of this Committee takes place within a complex framework involving economic, social, environmental, policy, regulatory and human dimensions. In considering how best to position Ireland's agri- food sector against that background, the Committee has decided that Ireland will become a world leader in Sustainable Food Systems (SFS) over the next decade.

This will deliver significant benefits for the Irish agri-food sector itself, for Irish society and the environment. In demonstrating the Irish agri-food sector meets the highest standards of sustainability – economic, environmental, and social – this will also provide the basis for the future competitive advantage of the sector. By adopting an integrated food systems approach, Ireland will seek to become a global leader of innovation for sustainable food and agriculture systems, producing safe, nutritious, and high-value food that tastes great, while protecting and enhancing our natural and cultural resources and contributing to vibrant rural and coastal communities and the national economy.

In this context, this Strategy has adopted a framework which revolves around high-level missions, underpinned by a series of key goals and actions. This reflects a movement in recent times to mission-oriented policy which responds to 'grand challenges' and moves from narrow sector-based approaches to more system-wide transformation. Alignment between the goals and relevant SDGs is indicated throughout.

This Strategy to 2030 has four main Missions:

- A Climate Smart, Environmentally Sustainable Agri-Food Sector
- Viable and Resilient Primary Producers with Enhanced Wellbeing
- Food which is Safe, Nutritious and Appealing, Trusted and Valued at Home and Abroad
- An Innovative, Competitive and Resilient Sector, driven by Technology and Talent

A high-level Monitoring and Implementation Framework is also proposed. This highlights areas for collaboration and partnership within the sector, but also involves external stakeholders in oversight and monitoring mechanisms, with specific requirements for environmental aspects. A more detailed plan with the actions and their owners, deliverables and timeline for implementation is published separately, as is the Strategic Environmental Assessment and Appropriate Assessment. It is not always possible to be specific on pathways to targets and deliverables. Many of the other policies directly affecting the sector

are the subject of separate processes and governance procedures. However, the strategic direction laid out here should input into and influence these.

A detailed look at each of the four missions follows, as well as the Monitoring and Implementation Framework.

MISSION 1

A Climate Smart, Environmentally Sustainable Agri-Food Sector



The agri-food sector in all its dimensions, from land to sea and all along the value chain up to the provision of food to consumers, is intimately connected to the natural environment. This relationship needs to be balanced to ensure a climate smart, environmentally sustainable agri-food sector for the next decade and beyond.

Many worthwhile, innovative measures have been developed over the years, in collaboration with primary producers, to mitigate both climate and environmental impacts and there are great examples of real success built on partnerships. From a water quality perspective, the Agricultural Sustainability Support and Advisory Programme (ASSAP); from a biodiversity perspective the locally led EIPs such as the Bride; from a climate, biodiversity and water quality perspective, national scale agri-environmental schemes such as GLAS; new, more sustainable fishing equipment; and Origin Green – the world’s only national food and drink sustainability programme. However, despite initiatives such as these, environmental metrics which the sector has direct influence over are trending negatively.

Agriculture has a key role in protecting both our climate and environmental credentials. The sector has recognised it is the largest contributor to Ireland’s greenhouse gas emissions, accounting for around a third, and from an air quality perspective is almost exclusively responsible for all ammonia emissions. While challenging from an Irish perspective and unusual in an international context, it demonstrates the economic, and historical importance of agriculture in Ireland relative to other industries. As the predominant land use in Ireland, agriculture and

forestry exerts the most pressure on water quality. Changes in agriculture, forestry and fishing activities have also impacted on biodiversity on land and sea. While overall bovine numbers have remained relatively stable, the removal of milk quotas has led to an expansion in the dairy herd resulting in particular environmental pressures. However all farming systems have a role to play in reducing the impact of agriculture on climate and the environment.

Facing into the decade to 2030, the agri-food sector has to make significant and urgent improvements in its environmental footprint. Leadership from all the stakeholders is paramount, as failure to achieve improvements in the environmental footprint will result in an erosion of Ireland’s reputation as a sustainable producer of quality food. It will also mean that Ireland cannot take a leading position internationally as an advocate of Sustainable Food Systems.

While the challenge is significant, solutions do exist and these are the focus of the Goals and Actions outlined in this Mission of ‘A Climate Smart, Environmentally Sustainable Agri-Food Sector’. The Mission takes a detailed, systematic approach to address each aspect of the environment – climate, ammonia, biodiversity, water, forests, seafood, the bioeconomy, food loss

and waste, and packaging. As custodians of the land and sea, farmers, fishers and forest owners have a key role in responding to the climate and biodiversity emergency. A broad range of approaches, actions, tools and technologies are presented in this Mission to help them in this journey. If implemented, they will enable them to no longer be considered as part of the problem and instead, will become part of the solution. It would be unfair and unreasonable to expect primary producers to do it alone and therefore Exchequer and EU financial supports will be required to encourage necessary actions and investments at farm level. A range of measures are also presented for other actors in the system to pursue – knowledge exchange practitioners both public and private, researchers, agri-food processors, retailers, consumers, the Government, amongst others. Through the combined efforts of many, in a spirit of partnership and with the ambition of becoming a leader in Sustainable Food Systems, the agri-food sector can play its part in operating within planetary boundaries, delivering a well-protected environment for the benefit of themselves, broader Irish society, and nature itself.





GOAL 1

Develop a Climate Neutral Agri-Food System so that by 2050, the Climate Impact of Methane is Reduced to Zero and Remaining Agricultural Emissions are Balanced by Removals; and Improve Air Quality



The actions outlined to address this goal are designed to be built on through more detailed plans, programmes and initiatives. Appropriate actions should be developed and implemented from both publicly-funded sources and from Industry, as well as through other partnerships (see Monitoring and Implementation Framework for more detail). The actions address both GHG and ammonia emissions, and many have multiple co-benefits for other environmental areas, particularly water quality and biodiversity, while also offering economic advantages. The role of forests in carbon sequestration, storing carbon in harvested wood products and substituting materials made from nonrenewable fossil fuels will play an ever-increasing role. The actions reflect those recommended in the Marginal Abatement Cost Curves for agricultural GHGs, forestry and ammonia and notable adoption and national recognition will determine success.

ACTION 1

Immediately implement the 'Ag Climatise' Roadmap.

'Ag Climatise' sets a vision for a 'climate neutral agriculture sector by 2050'. It was developed by the Department of Agriculture, Food and the Marine on foot of extensive engagement with stakeholders from industry, research, policy, farmers and environmental groups. It includes 29 actions, with specific and challenging targets aimed at reducing the environmental footprint of agriculture. These aim to reduce emissions of agricultural GHGs and ammonia, which are close to being joint products in that reducing the former will also lead to reductions in the latter. Many of these actions are being acted upon and they provide the key tools for carbon storage and emissions abatement. The establishment of a 'Signpost Farm Programme' will guide farmers on how to implement many of the actions in Ag Climatise. Collaboration among all stakeholders, particularly knowledge exchange services both public and private, will be the key to its successful implementation. Ag Climatise foresees a significant reduction in methane emissions, in the order of 24-47%, out to 2050. This Strategy to 2030 adds to this ambition by aiming to achieve a minimum 10% reduction in biogenic methane by 2030. This aligns with the international position of the Intergovernmental Panel on Climate Change (IPCC) and mirrors the approach being taken elsewhere. In conjunction with measures to reduce emissions, technology will play a key role in underpinning this ambition. Ag Climatise also recognises the importance

of increasing afforestation significantly above existing levels to at least 8,000 ha per year. Forestry's role in removing carbon dioxide from the atmosphere by sequestration, substituting materials and energy from fossil fuels and the importance of carbon storage in harvested wood products will play an important part in achieving a climate neutral economy.

ACTION 2

Produce detailed plans by Q2 2022 to manage the sustainable environmental footprint of the dairy and the beef sectors.

Ag Climatise makes clear that any increase in biogenic methane emissions from continually increasing livestock numbers will put the achievement of this target in doubt. While suckler cow numbers have gradually reduced over recent years, the number of dairy cows continues to increase, meaning that overall, total cattle numbers are relatively stable. However, the substantial increase in dairy cow numbers in some regions is posing challenges to some environmental indicators.

These plans should:

- Reduce total methane, nitrous oxide and ammonia emissions, and make a positive contribution to improved water quality and biodiversity;
- Address regulatory and legislative environmental requirements, taking into account future Climate Action legislation regulatory targets to 2030, and

revised Nitrates regulations;

- Recognise the linkages and inter-dependencies between the two sectors.;
- Build on the Ag Climatise measures; particularly the impact of management practices and the application of existing technologies at farm level, as well as emerging methane and ammonia mitigation technologies, promotion of better pasture management, including reducing chemical nitrogen use and increasing clover (and use of PastureBase Ireland), genetics and feed additives; and
- Consider incentives required to deliver and implement practices and technologies on farms, which are delivery/performance based.

Initiatives such as “Dairy Sustainability Ireland” (the first ‘whole of sector/whole of government’ approach to addressing the challenges of the industry), the Teagasc signpost farms (and proposed “Sustainable Dairy Farm of the Future” blueprint) and advisory services (public and private) are crucial here to support and assist farmers in implementing new practices.

ACTION 3

Update Ag Climatise, as required, to ensure consistency with new targets agreed nationally and internationally for the agri-food sector.

Ag Climatise is only a first step in agriculture making its contribution to climate mitigation. The Climate Action and Low Carbon (Amendment) Bill 2020, sets out Ireland’s National 2050 climate objective to achieve a ‘climate neutral economy,’ that balances emissions and removals within the State by the end of 2050 and in subsequent years. It is important to note that the draft Bill recognises the distinctive characteristics of biogenic methane and the fact that it is neither necessary nor feasible to reduce methane to zero. It will introduce a system of successive 5-year, economy-wide carbon budgets starting in 2021, and agriculture will be subject to a sectoral target - these will be reflected in updates of Ag Climatise. These updates on the measures needed to realise the revised targets will have a particular focus on abatement technologies likely to come on stream in the near future, such as feed additives, advancements in livestock genetics that make a significant impact on emissions output and greater offsetting through improved carbon sequestration and storage. Teagasc, Bord Bia, knowledge exchange practitioners and a range of other stakeholders will be crucial in this process of both implementing and updating Ag Climatise (see also Goal 7).

ACTION 4

Roll out ‘Carbon Farming’.

Ag Climatise commits to a pilot scheme for on-farm carbon trading, to reward farmers for the public goods they are providing. There are benefits to C-trading especially when it can mobilise greater positive action and support innovation at farm level that can result in verifiable emissions reduction and CO2 removals in the agricultural and LULUCF inventory. There is also scope to consider the role of forests and voluntary carbon markets. This should align with the proposed EU Carbon Farming Initiative as set out in the Farm to Fork Strategy, whereby a new regulatory framework for certifying carbon removals will underpin a payment to farmers. This will require a number of elements, as follows:

- a. The pursuit of environmentally sustainable land management practices that reduce CO2 loss from land. Irish grassland is a net source of carbon dioxide and this needs to be addressed. The core aspects to achieve this are; the maintenance of existing soil organic carbon stocks, the plugging of hotspots in organic soils, the prevention of new emissions on emission sensitive soils and the enhancement of long-term sequestration in grassland soils. A fuller understanding of the sequestration potential on farms is required, with a view to including all of the relevant elements in the inventory in the future.
- b. The development of measures that give farmers credit for practices that sequester carbon, i.e.

carbon credits or carbon farming. This requires evidence-based measurement, reporting and verification. One of the first steps will be the establishment of the 'National Carbon Observatory', as an integral component of the 'SignPost Farms', which will provide top down measurement of GHG fluxes from a range of different soils types. Improvements to a range of other datasets such as farm & field level activity data, lidar survey data, grass growth & crop modelling, climate & soils data and soils maps are needed to provide national level sequestration rates which will inform on-farm sequestration. This should align with the plans of the European Commission to develop a regulatory framework for certifying carbon removals based on robust and transparent carbon accounting, to monitor and verify the authenticity of carbon removals.

- c. Ongoing engagement with Ordinance Survey Ireland (OSI) and the EPA to complete the detailed national land cover and land use map.
- d. The introduction of an independent, robust, trustworthy certification mechanism that provides high quality monitoring, reporting and verification will be required (which could be modelled on the Woodland and Peatland carbon codes currently in operation in the UK). A first step in this is to carry out feasibility study on developing a voluntary carbon trading market that also investigates the potential to use private sector funding to support investment in carbon farming schemes that will increase sequestration and/or reduce emissions in soils, forestry and peatlands.

- e. A working group should be established to examine the practicability of developing a Carbon Market to enable farmers monetise the benefit from additional carbon sequestered on their farms. Climate Financing, from both public and private sources will be crucial in this and other measures. This is discussed further in the Monitoring and Implementation Framework.

ACTION 5

Ireland will play a leading role in shaping how greenhouse gas emissions from livestock farming are understood and addressed.

As research progresses on the different characteristics of various GHGs, especially short-lived emissions such as methane, these need to be recognised and reflected by the United Nations Framework Convention on Climate Change and the Intergovernmental Panel on Climate Change.

Crucial to this and to driving down GHGs and ammonia will be the role of innovation and research, and four research areas in particular should be prioritised:

- Novel feed additives to reduce the level of biogenic methane emissions, including their safety and efficacy. Closely related to this is the potential to develop new aquaculture opportunities, particularly the role anti-methanogenic properties of certain seaweed species could play in ruminant livestock diets.

- Grass, herbs and fodder varieties that deliver required sward yields and longevity at lower levels of nitrogen application.
- Grass Biorefining for increased nitrogen and protein use efficiency and lowering of emissions to air, soil and water.
- Animal genetics enabling the breeding of livestock with lower emissions.

In addition:

- a. **Collaborate within the Global Research Alliance on Agricultural GHGs and with countries that face similar challenges (such as New Zealand), particularly in areas such as;** research to reduce biogenic methane at scale, including through animal breeding, techniques to improve soil carbon sequestration under grazing systems and approaches to realising climate neutrality. Deepening strategic partnerships, through research and development, learning by doing, and farmer engagement should deliver faster progress on these issues of mutual interest.
- b. **A desk-top exercise currently being carried out on the establishment of a National Centre of Excellence in Environmental Sustainability Research and Innovation (GHGs, Ammonia, water quality and biodiversity) is expected to conclude in 2021 and this should form the basis for how to proceed with such an initiative.** In addition, the following points should also be taken into consideration:
 - Ireland needs to increase its resource and expertise in climate and greenhouse gas and

ammonia emission science and be in a position to provide expertise to international projects and efforts, in particular IPCC reports.

- There is an urgent need to develop expertise in methane science and soil carbon sequestration. Enteric methane accounts for 56% of total agricultural emissions and solutions are urgently required to reduce this at scale.
- Public-private research models such as Food for Health Ireland, VistaMilk and BiOrbic have proven very impactful in dealing with large research questions and this collaborative model should underpin sustainability research and innovation.
- The research programme should align with the Environmental Protection Agency's proposals for the delivery of five-year Assessment Reports (5YAR) on understanding of climate change, its impacts and response options.
- To maximise the prospects of success in these research efforts, particularly with regard to reducing enteric methane, this will take dedicated leadership, a mission focus (see Goal 1, Mission 4), sufficient resources both private and public, and the best talent the world has to offer.
- As a general principle, all research activities need to take better account of environmental sustainability. In particular, primary production research needs to take a more holistic approach so that productivity or competitiveness ambitions are not considered in isolation from environmental ambitions such as maintaining functioning ecosystems.

ACTION 6

Research and promote the concept of 'Regenerative Agriculture', particularly under Irish conditions.

This form of agriculture aims to improve the productivity potential of soil, reduce carbon levels in the air by recapturing and storing it in the soil and managing animal grazing to replicate nature.

ACTION 7

Scale up renewable energy (RE) sources, especially anaerobic digestion, biorefining and biomass supply, and solar PV; focus on energy efficiency; and examine potential barriers to the roll-out of RE at farm level, including necessary support for microgeneration and access to the grid.

Ag Climatise recognises that the agriculture sector has a key role to play in helping Ireland meet its renewable energy targets through the supply of bioenergy and biobased materials in displacing fossil fuels and energy intensive materials. In addition, adoption of energy efficiency and renewable technology generation at farm level can enhance the green image of the agri-food sector both nationally and globally. Citizens and farmers alike want to be paid for home production of surplus renewable energy electricity. Adoption

of renewable microgeneration at a farm level can be a cost-saving measure, with excess electricity providing an additional income generation stream. In addition, these offer important farm diversification opportunities. The roll-out, in 2021, of an enabling framework for micro-generation, which tackles existing barriers and establishes suitable supports, as foreseen in the Climate Action Plan 2019, will be crucial to the delivery of this action. Finally, it is important that relevant assessment be carried out for any renewable energy projects that could impact on protected or sensitive sites. Appropriate inter-planting, wildlife corridors and boundaries/screens should be considered where appropriate. Careful consideration of scale and siting of developments should be taken.

ACTION 8

The food and beverage industry will continue to drive down GHG emissions and develop zero waste approaches.

As highlighted in the Bord Bia Readiness-Radar Report, all supply chain actors need to prioritise reducing their CO2 emissions. The Radar also highlights a readiness gap that has developed between food companies at different levels of turnover. Smaller companies have fallen behind larger manufacturers in prioritising their CO2 emission reduction and so should prioritise addressing this. Government (including Bord Bia, BIM, Enterprise Ireland, EPA & the SEAI) should continue to provide supports to businesses for climate action, energy efficiency, sustainability mentoring, green enterprise and green support programmes in order

to develop low carbon business models. Businesses should also develop new collaborations with farmers to drive down their emissions. This will help to ensure companies keep pace with the increasing sustainability demands of global customers. An enhanced Origin Green Programme will be crucial in this regard (see Goal 7 below).

ACTION 9

Prepare for climate change through implementing the actions contained in the statutory Agriculture, Forest and Seafood Climate Change Sectoral Adaptation Plan.

The agri-food sector will be one of the sectors most impacted by climate change through changing and more severe weather such as floods, droughts and storms. Therefore there is a need to ensure systems are future-proofed in order to reduce any associated threats and build resilience including against disruptions to markets and supply chains. Along with implementation of the Sectoral Adaptation Plan, capacity building and awareness raising to improve resilience both at primary and industry level is essential.

ACTION 10

Carry out a risk analysis to assess the impact of climate change on Irish food production and food safety in the following areas in particular:

Soil health, crop production - their nutritional value and toxicity-particularly mycotoxins (i.e. toxic compounds naturally produced by certain moulds), animal health and onwards to human health, and animal welfare, algal bloom and aquaculture, pathogens across the food chain and biodiversity.

BOX 3: AG CLIMATISE

The Ag Climatise roadmap is based on stabilising methane emissions and a significant **reduction in fertiliser**-related nitrous oxide emissions, leading to an absolute reduction in the agricultural greenhouse gas emissions by 2030. The roadmap is based on a stable herd - continually increasing livestock numbers will put the achievement of this target in doubt. Crucially, it provides a suite of targets for industry and farmers to work towards to reduce the overall agri-environmental footprint.

Ag Climatise **aims** to:

1. Reduce GHG emissions from the sector. Methane from enteric fermentation and nitrous oxide from fertiliser use are the dominant greenhouse gases from agriculture.
2. Increase the carbon sequestration potential of Ireland's land use sector.
3. Reduce nutrient loss and contribute to improved water quality and biodiversity.
4. Meet our ammonia emissions reduction targets.
5. Build sustainable, resilient food production and land use management systems that meet these climate and environmental obligations, while also meeting market expectations.
6. Transparently communicate our progress; our Origin Green programme will play a key role in this regard.

The roadmap proposes two strands of activity – actions that can be implemented today and the development of cross-cutting enabling actions into the future.

The former sets out twenty **actions** across a number of areas such as reducing chemical nitrogen use, greater use of protected urea, genotyping the entire herd, improving animal health, reducing the crude protein content of animal feed to reduce ammonia loss, using novel feed additives to reduce biogenic methane, increasing the area of organic agriculture, reducing the management intensity of peaty soils, increasing afforestation and decreasing agricultural energy use.

The **cross-cutting enabling actions** in the future contain nine actions across areas such as continued professional development of advisors, establishing a network of sign-post farms, establishing a centre of excellence in climate smart agriculture and land use research, new sources of funding, and establishing a 'Future of Farming in Ireland Dialogue', which will include farmers, scientists, environmentalists and social groups to find practical solutions for productive, sustainable agriculture.

The roadmap highlights the fact that a failure to implement changes including those in Ag Climatise will mean that more radical corrective action will be necessary to ensure environmental commitments are met. Scientific research and innovation, the acceleration of the adoption of best practice at farm

level, and working in partnership will be critical success factors in reaching the vision of climate neutrality.

The roadmap states that policies implemented to achieve emissions reductions and enhance carbon removals may have social implications that need to be addressed for just transition. It contains an action to establish a 'Future of Farming in Ireland Dialogue', which will include farmers, scientists, environmentalists and social groups to find practical solutions for productive, sustainable agriculture.

Full details of Ag Climatise can be found here: gov.ie



GOAL 2

Restore and Enhance Biodiversity



ACTION 1

Build on the 'Farm Environmental Survey Pilot' to establish baselines of biodiversity habitats, including hedgerows, on every farm to inform future policy development and measure progress.

This is particularly important in relation to Natura 2000 sites (SACs and SPAs) in order to avoid or reduce impacts from agriculture, such as changes of existing semi-natural grassland of ecological value to some other type of land use. Relevant studies of potential direct and indirect impacts will be made available to agri-environment advisors and relevant agricultural workers (including farmers), where Natura 2000 sites or other high value ecological receptors are present on a landholding. This will include, but not limited to, an appreciation of appropriate buffer zones (e.g. in terms of disturbance effects on Annex II/IV (Habitats Directive) and Annex I (Birds Directive) species) or other proximal high value nationally and internationally important ecological receptors. As a matter of good practice, appropriately assessed mitigation should be applied to any unforeseen or uncertain effects of the Strategy. Scientific literature on habitat buffer zones will also be made available (e.g. the hydrological effects of forestry on peatlands). Training in the identification of these habitats will supplement existing in-house measures. In addition, Teagasc has been a leader in the EU incorporating sustainability reporting into its farm survey reporting. While challenging, DAFM and Teagasc should collaborate to consider building further biodiversity measurements into the National Farm Survey.

ACTION 2

Put in place more targeted agri-environmental schemes under the next Rural Development Programme (RDP) to protect and enhance Ireland's habitats and species.

These schemes should include results-based actions, including payments for delivery of specific measures across biodiversity (e.g. hedgerow conservation and addressing the decline in farmland birds, in collaboration with the NPWS), carbon sequestration and water quality. Natura 2000 sites should be suitably considered in these schemes, while recognizing the importance of implementing the most appropriate measures in the most appropriate places with respect to Natura sites, and screening relevant plans or programmes to ensure they are sufficiently targeted to avoid impacts on Natura 2000 sites. The introduction of locally led and results-based projects which farmers themselves have input into the design, such as through EIPs, offer many learnings on which to build initiatives. There should be consideration of the development of a targeted programme for High Nature Value (HNV) farmland, ideally locally adapted to different landscapes and with result-based payments to encourage optimal management. Ireland has over 1m ha of High Nature Value (HNV) farmland, extensively managed areas which are repositories of nature and culture that contribute positively to livelihoods. This consideration should reflect the quality and value of these habitats, as well as the high cost of restoring degraded and lost habitats.

ACTION 3

Undertake a national land use review and support the DECC led development of a land use strategy.

The national land cover map currently being designed by the OSI and EPA in collaboration with DAFM and other key stakeholders will be completed in 2021. Significant resources are being invested in this using remote sensing. This map will provide valuable information on the national land cover and land use. In addition work has begun by Natural Capital Ireland on devising Natural Capital accounts for Ireland and these should be linked through, for example, the accounts facilitating cost-benefit analysis. In addition, the ongoing work by BIM with the UN System of Environmental-Economic Accounting (SEEA) for the Irish Seafood sector should continue in order to contribute to the sustainable management of the sector.

ACTION 4

Ireland will play an active and constructive role in the development of measures to realise the objectives for pesticide use reduction in the EU Biodiversity Strategy 2030 and the Farm to Fork Strategy and in particular, the objective of reducing pesticide use by 50% by 2030.

ACTION 5

Conduct appropriate and relevant assessments of the impact of the more detailed Commission proposals for pesticide use reduction at the same time,

especially the potential for increased in-field crop losses and food waste further down the chain, as well as loss of competitiveness, which could lead to farm system and land use change. Whilst acknowledging the comparatively low level of pesticide use in Ireland and continued compliance with the EU Sustainable Use Directive, pesticide use across the agricultural sector should be reviewed and work should be advanced on: (i) the generation of new crop varieties using New Plant Breeding Techniques (i.e. precision breeding tools), (ii) more widespread use of Integrated Pest Management (IPM) to reduce pest pressure, (iii) crop rotations that involve more diverse crops, and (iv) further research and knowledge transfer in these areas as well as the efficacy of biological products for Irish cropping systems.

ACTION 6

Input into the next National Biodiversity Action Plan, particularly on how the agriculture, forestry and fisheries sectors can contribute to the conservation and restoration of threatened habitats, species and protected areas.

ACTION 7

Ensure the necessary actions for agriculture are included in the new All-Ireland Pollinator Plan and that they are disseminated to farmers.

Appropriate land management practices are essential to conserve pollinators in Ireland.

ACTION 8

Ensure that farms and forests do not contribute to habitat destruction and isolation, and also protect features of cultural heritage and traditional landscapes.

This should include better enforcement of existing environmental rules, including strengthened implementation of the Environmental Impact Assessment (EIA) Agricultural Regulations in order to avoid habitat removal and loss of carbon pools. Any risk(s) to any Natura 2000 sites as a result of new agricultural activities or enterprise should be subject to suitable environmental assessment requirements under AA and EIA (Agriculture) criteria. In addition, operations should be avoided in known areas of Annex II/IV (Habitats Directive) mammal (volant and non-volant) and Annex I (Birds Directive) bird species during the breeding or wintering season in order to minimize disturbance. This approach will also consider transboundary effects where appropriate on a case-by-case basis.

ACTION 9

Carry out restoration management of grazed peatland habitats (through, for example, European Innovation Partnerships).

ACTION 10

Build on the measures introduced to protect and foster greater biodiversity in forests.

Such as minimum broadleaf composition, setbacks from watercourses and archaeological features, Areas of Biodiversity Enhancement and the Woodland Environmental Fund, whilst recognising the need to maintain their economic viability as forests with rich biodiversity offer significant public goods and societal benefits.

CASE STUDY:

BIODIVERSITY REGENERATION IN A DAIRYING ENVIRONMENT (BRIDE) EIP



The BRIDE project is one of 23 EIP-AGRI projects that are funded by DAFM under the Rural Development Programme (RDP) 2014-2020. These projects are designed and implemented by their own Operational Groups which bring together actors such as farmers, researchers, advisors and agri-businesses to identify innovative solutions to particular challenges facing the agri-food sector and the rural economy.

This innovative project, based in the River Bride catchment of north-east Co. Cork and west Co. Waterford, aims to design and implement a cost effective, results-based approach to conserve, enhance and restore habitats in lowland intensive farmland. The project is based on every farm striving to reach 10% of their farm in Biodiversity Managed Area (BMA). At the outset, a template was developed to achieve this based on a traffic light system whereby farmers who have a low BMA would be incentivised to increase their area to attain the 10%. The other part of the payment is an incentive to increase the quality of the BMA. The project is also improving the national awareness of

the options that are available in an effort to maintain and enhance wildlife on intensively managed farmland without unduly affecting agricultural production.

The project is now midway through its lifespan and appears to have struck a chord with the participants and also the non-farming public who want to support farmers in improving farmland biodiversity. The project has shown how farmers can play their part in addressing complex and multi-dimensional agri-environmental issues such as biodiversity, water and air quality and reducing carbon footprint.



GOAL 3

Protect High Status Sites and Contribute to the Protection and Restoration of Good Water Quality and Healthy Aquatic Ecosystems, as set out in the Water Framework Directive



ACTION 1

To protect waters from agricultural pollution, transition the agricultural sector to a lower chemical nitrogen use system, and urgently in regions with identified water quality problems, particularly from diffuse losses of nitrogen.

Ag Climatise focuses strongly on reducing fertiliser use and loss of nitrogen to the environment. Reducing nitrogen surpluses will have a number of co-benefits by reducing both GHG and ammonia emissions, while also benefiting water quality and biodiversity.

ACTION 2

To further protect waters, including surface waters, from agricultural, forestry and urban/industry pollution (including microbiological pollution), land use activities need to manage and mitigate the losses of nitrogen, phosphorous and sediment to water.

Key elements in the realisation of this action include:

- a. Complete the review of Ireland's Nitrates Action Programme in 2021, and subsequent reviews, and adjust the regulatory baseline accordingly for

nitrogen and phosphorous.

- b. Make adjustments to the research and advice on agricultural systems of production (grassland, tillage etc) to bring them into line with the transition to a lower chemical nitrogen use system and implement these as soon as possible
- c. Recover more nitrogen and phosphorus from livestock manures, increase the use of multi-species pasture swards (building on learnings from projects such as 'SmartGrass' and 'SmartSward') and incorporate more clover in grass swards (in line with Ag Climatise provisions).
- d. Target, recognise and implement critical source areas for the protection of waters for both Nitrogen and Phosphorus across all farms to support the spatial targeting of measures both for voluntary and nationally supported schemes. Measures (e.g., attenuation zones, riparian zones, buffer strips) based on on-farm assessments in sub-catchments designated as 'at-risk' will be important in intercepting nutrient pathways, particularly phosphorous, between critical source areas and watercourses.
- e. Establish at a national level a baseline soil health assessment through mapping soil carbon and the nutrient profiles for both micro and macro nutrients at a field scale to support future balanced soil specific nutrient advice to reduce potential nutrient losses to water while reducing agriculture dependency on chemical fertilisers.
- f. Develop an approach through scientific modelling at the catchment level that can inform policy and mitigation strategies to protect and restore water

quality. The modelling approach should include Climate impacts on agriculture and its impact on water quality.

- g. Enhance Forest Service oversight where forestry related operations are planned in high status catchments.

ACTION 3

Reduce the risk of agricultural use of pesticides impacting water, particularly drinking water, in terms of safety and the health of the aquatic environment.

The use of MCPA and other herbicides in agriculture that are impacting on drinking water quality should be reduced to the maximum extent possible by fully implementing the principles of integrated pest management. This means that the possibility of using non-chemical methods for weed control must always be carefully considered in the first instance and prioritised where feasible. In cases where herbicides are absolutely necessary, best practice use guidelines for the protection of water quality must be followed. In relation to rush management, there is no requirement to use MCPA or other herbicides to ensure that land remains eligible for payments. Publicly available guidance on the sustainable management of rushes to minimise herbicide use should be followed.

ACTION 4

Support farmers to target the right measure in the right place.

Agriculture and forestry have a significant role to play in protecting and restoring water quality, and three key approaches should be taken:

- a. Multi-stakeholder (including public/private) collaboration in programmes such as the Agricultural Sustainability Support and Advice Programme (ASSAP) and the Local Authority Waters Programme (LAWPRO), as well as bottom-up and community networks such as BASE Ireland and Farming for Nature.
- b. Implementation of the targeted regulations via the Water Framework Directive and Nitrates Directive. From an implementation perspective, ensure there is a shared responsibility and ownership approach across all Government Departments and Agencies, while ensuring Industry guides responsibly to ensure farmers operate within the National regulatory boundaries.
- c. More targeted support (across climate, water and biodiversity) under the next CAP and Rural Development Programme (RDP) alongside results-based payment schemes. These should be designed to ensure participation by more intensive farmers who typically do not engage with Agri-Environment Measures, while also including Natura sites where relevant. Where possible, forestry measures should encourage the planting of native riparian woodland to protect watercourses.

ACTION 5

Launch a National Soil Sampling and Analysis Programme to develop a baseline of information in relation to nutrient cycling and carbon sequestration functions in soils and develop a National Soils Strategy that will assess all appropriate soil health parameters and will inform future policies on good soil management practices, including at a regional level.

Good soil health is critical in sequestering Carbon, producing nutrient-dense food, supporting biodiversity, building resilience against climate change and much more besides. Good soil fertility and structure is a fundamental of sustainable production systems but only around 15% of Irish soils have good overall fertility. It should be a priority to address this issue as soils at optimum fertility and pH recycle nutrients more efficiently and should lead to a reduction in inputs for the same or increased levels of grass or crop production while also reducing nutrient loss. The Strategy should also take account of the role of soil as a habitat, and farmers should adopt sustainable soil management practices to reduce soil compaction, soil erosion, increase organic matter and enhance biodiversity. The National Soil Sampling and Analysis Programme will be an important element in the development of the National Soils Strategy.

CASE STUDY:

NEW SIGNPOST FARM PROGRAMME

The SignPost Farm Programme is a Teagasc led initiative with a 'whole of industry approach' to accelerate the uptake of measures in the Teagasc MACCs as well as the wider sustainability agenda including economic viability.



Central to the programme is a network of SignPost Farms, which will act as demonstration farms for the programme and sites for carbon sequestration measurements. These will point the way forward towards climate smart farming, and will be central to the second element, the SignPost Advisory campaign, which will mainstream the climate action messages.

In collaboration with industry, a nationwide network of 100 farms representing all sectors will implement a range of measures such as; incorporation of clover into grasslands, low emissions slurry spreading (LESS) and the use of protected urea. Developments in energy use efficiency, bioenergy and anaerobic digestion will also be demonstrated. Baseline measurements of a range of sustainability metrics such as soil carbon and biodiversity will be taken during the lifetime of the programme and progress on these metrics will be monitored. The soil carbon measurements will form an integral part of a new National Agricultural Soil Carbon Observatory.



GOAL 4

Develop Diverse, Multi-Functional Forests



ACTION 1

Develop a new Forestry Strategy for Ireland (in line with the recommendation of the Mackinnon report).

This should be prepared with the following key needs in mind:

- (i) Maintain and protect the existing forest estate and reduce deforestation,
- (ii) Increase forest cover, including continuous cover forestry and agro-forestry
- (iii) Enhance delivery of ecosystem services from new and existing forests, including climate change mitigation, adaptation and biodiversity
- (iv) Grow the circular bioeconomy by supporting actions that underpin the importance of forest biomass. In meeting these needs the direction should be towards diverse, multifunctional forests that strengthen the economic viability of rural communities, protect our environment and are resilient in the face of climate change.

This Strategy should underpin the new Forestry Programme by setting out a pathway that not only supports the future economic viability and development of the sector but introduces new measures that will maximise the multiple benefits forestry delivers for society. The new Strategy should focus on sustainable forest management, afforestation, maximising the potential of the exiting forest estate and reducing deforestation.

ACTION 2

Examine options for afforestation on state owned lands, building on initiatives from Coillte and Bord na Móna.

ACTION 3

Place farmers at the centre of a new and improved afforestation scheme.

If afforestation targets are to be met, there needs to be greater flexibility in how trees are planted on farms in order to provide farmers with more options that complement their existing farming model. Harmonisation and coherence with other agriculture support measures is also needed. A revised afforestation scheme could include: farmers undertaking the strategic planting of trees to create filtration buffers for example which can reduce sedimentation of adjacent water courses and intercept nutrient runoff from dairy and cattle farms to protect water quality; new native woodlands which can provide habitat corridors for wildlife while at the same time providing a source of domestic fuel wood; or small forest areas, rewilding and pioneer woodland, shelterbelts, riparian planting and continuous cover forestry, with an increased focus on expanding and connecting areas of native woodlands. The scheme should encourage the principle whereby the greater the ambition in terms of delivering ecosystem services,

the greater the reward. Further, it must encapsulate a whole of society approach and public afforestation should also be included in this new vision for tree planting. This should encourage public bodies to review their land bank and in doing so establish native woodlands on suitable bare land.

ACTION 4

Encourage businesses to play their part when it comes to increasing forest cover.

The existing Woodland Environmental Fund is a good example of how businesses can be mobilised to create additional incentives to farmers to plant trees. New initiatives will need to be developed in order to harness this opportunity for forestry.

ACTION 5

Implement Project Woodland, to ensure that the licensing system for tree felling, thinning, roads and afforestation provides a predictable and efficient service for applicants and to ensure that forests play a positive role in the environment.

The positive contribution of forests and agriculture to the environment is recognised and continued participation in the Blue Dot Catchments Programme and the LIFE-IP Waters of Life Programme will

continue to highlight best practice. The important role of forests in the implementation of measures in the *Forests & Water Achieving Objectives under Irelands River Basin Management Plan 2018-2021* will continue to have positive impacts on water quality.

ACTION 6

Promote and develop the benefits of increased use of wood and wood products as a pathway to reducing carbon footprints.

ACTION 7

Work with the European Commission initiative to introduce a regulation that aims to minimize the risk that products linked to deforestation and forest degradation are placed on the EU market and to develop a definition of deforestation-free supply chains.

In addition, use the EU Timber Regulation to prevent the introduction of illegally harvested timber on the EU market.

ACTION 8

Promote the positive role of woodlands in relation to human health and mental wellbeing.

Also acknowledging the benefits of trees for animal welfare for shelter and shade.

CASE STUDY:

WOODLAND ENVIRONMENTAL FUND

The Woodland Environmental Fund (WEF) is a unique scheme in that, instead of distributing exchequer and EU funding to farmers, the WEF creates a third source of finance - funding from the business community which is given directly to farmers to establish native woodlands. Native woodlands are an integral part of Ireland's natural heritage, history and culture, and are unique in terms of their biodiversity.

These forests are home to a host of specialised woodland animals and plants, including red squirrel, pine marten, great spotted woodpecker, narrow-leaved helleborine and wood millet, to name but a few. They provide numerous ecosystem services, including the protection and enhancement of water quality, wider habitat linkage, landscape enhancement, opportunities for outdoor recreation and interpretation, and carbon capture.

The WEF ties in with the Department of Agriculture, Food and the Marine's existing Afforestation Scheme which covers 100% of the cost of establishing native woodlands and also pays an annual premium to the landowner of up to €680 per hectare payable each year for 15 years. The WEF involves an additional top-

up of €1,000 per hectare by the business as a once-off payment for farmers and other private landowners.

A number of large companies are participating in the WEF. While climate neutrality is one driver for participation, there is also huge interest amongst the businesses community in getting involved in projects that restore biodiversity. Businesses are embracing the potential of the WEF; one company for example is planning to establish hives on their native woodland to produce honey, and several companies have organised planting days for their staff. The business appetite for the WEF has jumped significantly and a strong pipeline of interest is now in place as more and more businesses move towards multiannual commitments to the WEF.

During 2020 a total of 450 hectares of native forests were established, the highest area since records began. Of this, over 60 hectares were funded under the WEF. Finally, since the introduction of the WEF the amount of native woodlands planted as a percentage of total planting has doubled from 10% in 2018 to 20% in 2020.



GOAL 5

Enhance the Environmental Sustainability of the Seafood Sector



ACTION 1

Contribute to the development of a successor to ‘Harnessing Our Ocean Wealth’, the integrated marine plan for Ireland encompassing all aspects of the marine, with a greater focus on sustainability.

This will require greater stakeholder engagement with new targets and indicators, which will be a key element in enhancing the environmental sustainability of the seafood sector.

ACTION 2

Total Allowable Catches (TAC) should continue to be informed by science and then implemented under a robust fisheries control system underpinned by sustainable fishing practices.

To avoid overfishing and ensure a sustainable long-term seafood industry, fisheries are managed through the EU Common Fisheries Policy (CFP). This includes the setting of annual TACs for most commercial fish stocks from which national quotas are derived. Fishing at maximum sustainable yield and fishing smarter to avoid juvenile fish or unwanted catches should be followed.

ACTION 3

Continue towards improved fisheries sustainability and meet the ‘Landing Obligation’.

Continue to develop technical solutions and approaches which help eliminate the wasteful practice of discarding; contribute towards improved fisheries sustainability; and meet the ‘Landing Obligation’ (or discard ban) and other legal requirements. Ireland has been very proactive, through the conservation work of BIM, in developing ways of omitting juvenile fish and non-target fish in fishing gear and this work should intensify. In addition, efforts to develop infrastructure to handle and store unwanted catches should continue. Close collaborative relationships between all stakeholders including third level institutes will be required to further develop technical conservation measures to reduce or avoid exploitation of certain fish stocks.

ACTION 4

It will be essential to maintain a level playing field between the EU and UK on issues such as the landing obligation and technical conservation measures to ensure the long-term conservation of fish stocks and protect the ongoing sustainability of the Irish fleet.

The fish stocks of importance to the Irish fleet and the related fishing grounds are to a large extent shared with the UK and are partly within the UK EEZ. While the UK is now an independent Third Country, the TCA commits to applying proportionate and non-discriminatory measures for the conservation and management of fish stocks, while preserving regulatory autonomy. The agreement of appropriate and ambitious technical and conservation measures with the UK will be a high priority.

ACTION 5

Implementation of the Irish Inshore Fisheries Sector Strategy 2019-2023: Development of sustainable inshore fisheries will need to be balanced with safeguarding fishing-related livelihoods and protecting marine environments.

The majority of Ireland’s marine Natura 2000 sites are located in and around inshore waters. This means that in some circumstances, fisheries management measures must be specifically designed to take account of the conservation objectives of relevant habitats and species. A key theme identified in the Irish Inshore Fisheries Sector Strategy 2019-2023 (task 11) is changing environmental conditions. Those involved in the inshore sector require additional information, education and training to future proof their businesses by mitigating the potential impact of changing environmental conditions.

ACTION 6

Follow the 11 objectives of the new National Strategic Plan for sustainable Aquaculture (NSPA) development for the period 2021 - 2030

(Administrative procedures, Spatial planning and access to water, Consumer information, Producers and market organisation, Human and animal health and welfare, Environmental performance, Climate change, Innovation, Control of aquaculture products, Integration of aquaculture in the local economy and Data and monitoring). The sector should be developed in a sustainable way, including shellfish aquaculture and implement the recommendations of the report of the Independent Aquaculture Licencing Review Group, to ensure that feed products for aquaculture are sourced and produced in the most sustainable manner possible. Shellfish plays an important part in improving coastal water quality and may also have a part to play in climate change mitigation through the carbon sequestration potential for shellfish.

ACTION 7

Realise our outstanding target of 10% of Marine Protected Areas under the Marine Strategy Framework Directive as soon as is practical and aim for 30% of marine protected areas by 2030.

Seafood activities in or adjacent to protected areas are subject to Appropriate Assessment and aquaculture operations are also screened for EIA. Furthermore, under the Marine Strategy Framework Directive (MSFD), EU Member States must achieve or maintain Good Environmental Status (GES) in the marine environment by 2020. The programme of measures to aid in achieving and maintaining good environmental status of the various criteria examined under the MSFD is important in this regard. Industry stakeholders should continue to work with relevant agencies to deliver on the EU Biodiversity Strategy, MSFD, Marine Protected Areas (MPAs), and the Green Deal in the protection of marine ecosystems.

ACTION 8

Seafood Sustainability Programmes should be further developed to provide independent evidence to customers of good practice.

The accredited certification programmes provided by BIM together with Fishery Improvement Projects as well as external certifications that have been achieved provide a strong platform from which to build greater proof of the sustainability and circularity credentials of Irish seafood, in line with Origin Green.

ACTION 9

Prioritise the 'Clean Oceans Initiative' in the effort to collect, reduce and reuse marine litter.

The initiative has seen significant interest by fishing trawlers in addressing the serious problem of plastic and marine litter in the ocean.

ACTION 10

Carry out an assessment of the potential impacts of climate change for the seafood sector, including issues such as the changing distribution of fish, rising sea temperatures, the possibility of exotic species, and the industry's contribution to GHGs.

CASE STUDY:

DRIVING SEAFOOD SUSTAINABILITY THROUGH ADVANCES IN TECHNOLOGY



BIM and the Irish Industry collaborate closely on a range of technical solutions to reduce unwanted catches in these fisheries. Introduced under the 2013 reform of the Common Fisheries Policy (CFP), the European Union Landing Obligation (LO) aligns existing legislation which prohibits high grading and enhances the existing requirements to record all catches with additional requirements to retain previously discarded catches. The use of selective fishing gears reducing the capture of unwanted catches is also required.

Fully implemented in 2019, this new fisheries management approach raised challenges for Ireland's commercially important bottom trawl fisheries for Dublin Bay prawns (Nephrops) and for fish species such as cod, haddock and whiting. BIM and the Irish Industry collaborated closely on a range of technical solutions to reduce unwanted catches in these fisheries.

A relatively high level of fish discarding in the Nephrops fishery was identified as a priority early on. Development of a relatively simple gear modification

such as an enlarged 300 mm square-mesh escape panel in the back (codend) of the trawl significantly reduced haddock and whiting catches. Widely adopted by Irish fishers, it looks like the benefits for fish stock sustainability are starting to accrue. In the Irish Sea, for example, haddock landings have increased by 75% and catches of undersize whiting have dropped by 48% since the gear was introduced.

With discard rates as high as 30% in some areas, solutions were also needed for undersize Nephrops. Firstly, the biological and economic implications of an increase in the minimum codend mesh size were assessed. A 45% reduction in undersize Nephrops and associated improved profitability over the course of a fishing season led to a nationally legislated increase in mesh size from 70mm to 80 mm. Secondly, exemptions from the landing obligation may be permitted where relatively high post-capture species survival in fishing gear can be demonstrated. BIM demonstrated a 65% Nephrops survival rate in a trawl using a 300 mm escape panel and the EU granted an exemption to all vessels using such environmentally friendly gears in Irish waters. This means that any undersize Nephrops taken aboard can be put back to sea and do not count against quotas with major biological and economic benefits for Irish vessels.

Innovative solutions have also been developed and implemented in fisheries targeting fish species. Rotating the angle of mesh in the codend by 45 degrees creates greater mesh openings through which fish can escape. Known as T90 mesh, testing of a range of different mesh sizes in this orientation demonstrated positive results with substantially fewer undersize catches and improvements in fish quality for vessels targeting whiting and haddock.



GOAL 6

Embed the Agri-Food Sector in the Circular, Regenerative Bioeconomy



A climate smart, environmentally sustainable agri-food sector should adopt circular principles, where appropriate. In such a circular system, production systems are regenerative. Livestock, arable, marine and horticulture systems in particular should examine the use and circularity of raw materials from each other's supply chains and also waste flows from the food industry for re-use in primary production as appropriate. In addition, a circular bioeconomy needs advanced technology and traditional farming knowledge to succeed but strongly relies on biodiversity as its true engine. There are three areas for action: at the primary level (natural capital and agriculture, forests and seafood), cross-cutting actions and in the area of food loss & waste and packaging.

PRIMARY SECTOR

ACTION 1

Develop new bio-based value chains based on Ireland's comparative advantage in the production of grass, legumes and other perennial species.

This should be undertaken, where possible, with the participation of local communities, in areas such as:

- The bioeconomy will seek to provide for an integrated approach to achieve climate neutral farms by reducing GHG emissions and by increasing farm-based carbon sequestration and storage including by displacing fossil fuel, mineral based or non-sustainable inputs with local renewable, nature-based or biobased input alternatives and by achieving increased resource efficiency and value with agricultural outputs such as grass, crops, forestry and bio-marine resources. Small scale biorefining e.g. grass, organic matter or reuse of nutrients that also can contribute to climate mitigation efforts.
- Timber production, which is currently estimated to double in the years up to 2035. Potential exists to develop and test new technologies and environmental solutions for the use of wood-based materials in the (re)construction and/or retrofitting of buildings as well as more novel opportunities for forest-based and forestry processing residues.

- The oceans and seas offer huge potential for cascading use of biomarine resources in the bioeconomy. These include: the use of fisheries discards, algal biorefineries, seaweed farming, the multi-use of marine space in off-shore platforms, zero-waste, digitalised and circular aquaculture, new products from jellyfish, biodiscovery and new pharmaceuticals from marine ecosystems, and carbon sequestration.

ACTION 2

Scale up resource-efficient, circular and low carbon solutions based on principles of renewable energy, cascading and circular use of sustainable biological resources.

- Examine biorefining, anaerobic digestion and other technologies, including bioenergy, which can convert low-value material to higher-value material and provide for treatment of waste, protection of the environment, and the production of chemical building blocks, fuels, power and heating (see also Goal 1). Cross-sector collaboration and investment, nationally and internationally, should be pursued for the development of circular and climate-neutral industries.
- Industry will take initiatives to advance a circular business model, e.g. develop microbiome-based and smart protein-based solutions, the recovery of nutrients, bioactives from food and fibre processing to generate biobased materials and energy, thereby mitigating emissions, reducing energy use and increasing energy efficiency.

CROSS-CUTTING

ACTION 3

Develop a plan for the scaling up of circular bioeconomy approaches

- a. This should seek to scale up and deploy the bioeconomy locally, capitalising on and going beyond successful research and innovation investments in order to create growth and job opportunities at the local level.,.
- b. Develop further policy & regulatory coherence, research and innovation agenda setting, enhancing entrepreneurship, innovation, finance and education approaches, to enable a sustainable and circular bioeconomy.

ACTION 4

A Knowledge Hub including an Observatory for Biomass Resources should be considered for development,

to establish a comprehensive monitoring system to measure and analyse biomass flows and implement comparative sustainability assessments. Such a resource could also interact with industry and aid the development of a bioeconomy network.



CASE STUDY: NUTRAMARA

Nutramara, based in Tralee, County Kerry, is a leader in the blue bioeconomy, harnessing the power of biotechnology, biology, biorefining and the ocean to develop next generation phytochemical ingredients such as alga-fibre, omega oil, carotenoids and formulations from sustainably harvested, Irish organic seaweed.

The company has developed a robust sustainability plan as part of the Origin Green programme including: Ensuring sustainably sourced raw materials; Becoming zero waste by utilising a novel biorefinery process; Maintaining chemical free processing; Participating in community initiatives and Promoting the benefits of marine ingredients to the general public. The wild, organic seaweed used in the Nutramara supply chain is sustainably hand harvested, meaning re-growth is guaranteed and the delicate seabed and marine life go undisturbed. Nutramara seaweed harvesters sustainably cultivate and harvest seaweeds in optimum growth phases from the Atlantic Ocean and complete primary processing in an organically certified facility. This in-chain collaboration enables Nutramara to

process pristine seaweed harvests within 12 hours, using novel sustainable technology releasing “closest to nature” high potency phytochemical molecules. The company has developed a biorefinery approach to processing to ensure 100% of the raw material seaweed is utilised to create value-added products, meaning zero waste with maximum output.

A team of world-class scientists, PhD students and Post Doctorates from Shannon Applied Biotechnology Centre, Teagasc Moorepark Technology Limited and the BiOrbic Bioeconomy Research Centre work collaboratively within Nutramara to develop scientifically validated high value marine derived ingredients and formulations.



FOOD LOSS & WASTE AND PACKAGING

An essential part of circular biobased production is putting an end to avoidable waste that occurs in various parts of the food chain, from primary production to the waste-bins in kitchens, with the re-use of valuable materials that are unavoidable waste. Ireland should set an ambition to be a leader in tackling food waste and meet the UN SDG target of halving per capita food waste by 2030. The recently published **Waste Action Plan for a Circular Economy** sets out twenty actions in this area and all agri-food stakeholders should work to play their part in the implementation of this plan.

ACTION 5

The DECC is the lead on food waste prevention and the draft Waste Action Plan contains twenty actions many of which relate to the agri-food sector. DAFM will work collaboratively with the DECC in implementing these, and on linking with work already underway in this area.

ACTION 6

In line with the commitment in the Waste Action Plan, work with stakeholders to develop a National Food Waste Prevention Roadmap that sets out a series of actions to deliver the reductions necessary to halve our per capita food waste by 2030, meet any other related targets, and promote our transition to a circular economy.

All relevant stakeholders in the agri-food sector, as well as retailer, food service and consumer representatives, should participate in this, building on the work of the existing National Waste Prevention Programme and related initiatives. Activities within the roadmap should include behavioural change and educational initiatives for trade customers, consumers and businesses, technical support interventions, data gathering research, monitoring and evaluation. An important element will be developing a common methodology for measuring and reporting food waste across food processing companies. As the responsible body for reporting food waste statistics, the EPA has a number of projects ongoing in this area. Origin Green could act as a vehicle for facilitating food industry actions, in close collaboration with the EPA. Redistribution is a further important element so that the food waste hierarchy is followed and this can also play an important role in dealing with shocks in supply chains due to unforeseen events (e.g. Covid) while additionally offering positive social impacts.

ACTION 7

Research the extent of food loss at the production (primary) stage in an Irish context, and develop innovative ways of reducing it.

The research should seek possible synergies in measures to address this food loss, with those aimed at reducing food waste in food processing and in households and the commercial sector. It should also connect with ongoing EPA research projects on data from primary production which will initially inform the development of innovation approaches.

ACTION 8

Along with efforts to reduce packaging, the industry should urgently pursue more sustainable packaging.

Plastic packaging has been identified by the food industry as one of its most significant sustainability risks, but it is often necessary for food safety reasons, and in the context of the Covid-19 pandemic, for consumer acceptability. Advances in the bioeconomy, particularly recycled polymer and bio-based packaging, offer potentially important solutions. Greater collaboration and research between food companies and others in the supply chain, such as packaging companies, should be encouraged. These collaborative research projects can be supported through EI's programmes including Technology Centres & Gateways and Innovation Partnerships among others.

CASE STUDY: MEADE POTATO COMPANY



The Meade Potato Company was incorporated in 1982. From their family farm in Lobinstown, County Meath, Meade Farm have now been growing, packing and distributing premium quality potatoes, fruit, vegetables, salads and organics over the past five decades.

They have turned a sole trading potato business into Meade Farm Group, an award-winning agribusiness that offers Irish consumers a range of sustainable, quality produce. They have grown from a single packing store to an agricultural enterprise with separate divisions for Potatoes, Fruit & Veg, Prepared Foods, and Starch, each housing numerous state of the art production lines - all of which serve to make the journey from farm to fork as efficient as possible.

Sustainability has guided the expansion all along the way, so the skyline now includes a wind turbine, solar panels and water harvesting storage tanks. While the majority of the produce is Class 1, there is always a portion of every crop that is either left behind in the field or outside of the specification. Their entire surplus to requirements produce previously went for stock feed and to community food banks like

FoodCloud. While these efforts to channel produce meant that Meade Farm was a zero-food-waste facility, they challenged themselves to find higher food value, alternative markets for it.

- Identifying a gap in the foodservice/catering market for premium quality peeled and chipped potatoes saw Meade Farm invest in a peeling line. This enterprise utilised Class 1 produce as well as some potatoes that had initially been graded as surplus to requirements. This business has thrived, now necessitating an expansion to two lines. Meade Farm now sells IFQA award-winning branded peeled/chipped potatoes to retailers.
- The by-product from the peeling process was initially fed to beef cattle, as was all surplus potatoes. However, the installation and subsequent recent upgrade of a starch extractor can now use all these potatoes to provide food grade starch that can be sold on the open market from Ireland's only indigenous starch ingredient, or used in other complementary products.
- On-farm crop loss is another area where Meade Farm found better alternatives. For many years, the crops that fell through the harvester were left in the field to be used as fertiliser for the next crop, usually of grass or spring barley. Meade Farm were

approached by long-time collaborator FoodCloud in 2016 to help them set up a gleaning network and were delighted to support them to help reduce on-farm crop loss. Gleaning is where produce left behind in the field is picked up and distributed to those in need.



GOAL 7

Strengthen and Invest in Origin Green and Other Sustainability Supports to Reflect the Higher Level of Ambition for the Agri-Food Sector



Origin Green has been instrumental in monitoring and driving improvements in environmental sustainability and demonstrating this to trade customers and consumers both at home and abroad. Origin Green now needs to require a higher level of ambition from participants to achieve ‘stretch targets’. Ireland’s agri-food sector needs to demonstrate validated performance around producing food with a low environmental footprint and Origin Green, with its 53,000 farms and 324 companies, has a critical role to play in demonstrating this performance. New and emerging technologies for data collection and data analytics will be a vital element in this. The financial supports available through both the SEAI and Enterprise Ireland to incentivise investment in environmental projects within manufacturing facilities have been essential tools enabling companies across the Agri-Food sector to undertake investments in environmental sustainability.

The following actions are required:

ACTION 1

Promote and encourage participation in the new Origin Green Gold Membership, thus working towards higher levels of ambition.

With the introduction of the Origin Green credits system in early 2020, Bord Bia now distinguishes food company members which are excelling in sustainability performance in a particular year. It has enabled a new level of membership, ‘Origin Green Gold Membership’.

ACTION 2

Emissions targets: there is a need for an enhanced focus on mandatory and ambitious emissions reduction targets within the Origin Green programme and additional guidance provided to companies on mapping their net zero pathways. Sector targets and pledges should also be explored.

ACTION 3

The metrics and evidence base from Origin Green need to be improved. A framework for delivering this involves building on Origin Green participant companies performance and metrics on sustainability and the associated quality assurance programmes at farm level.

Improvements should enhance how information is gathered, analysed and shared, both with participants (primary producers and processors) to drive engagement, and the market to provide proof of sustainably produced food and drink. Bord Bia, DAFM and other State agencies will collaborate and share information to enhance the farm sustainability and quality assurance programmes (incorporating recommendations from the Sign Post Farms where appropriate), with toolkits and supports which are robust and easy to use at farm level, particularly in measuring carbon emissions, utilising the latest technologies available. Bord Bia will also develop tools for supporting companies to drive sustainability improvements such as learning modules, guidance documents and feedback reports. Metrics need to be market relevant and able to stand up to independent, critical scrutiny. Primary producers need to see and understand a benefit from Origin Green membership, for example through improved information on their own environmental performance, policy supports and market positioning of their products.

ACTION 4

Develop closer links to AKIS.

On-farm assessments constitute a key component of the Origin Green programme with sustainability assessments rolled out at farm level through Bord Bia's Sustainable Assurance Schemes. This now needs to also help deliver the Ag Climatise roadmap. Drawing on the respective strengths of both agencies, Bord Bia and Teagasc will collaborate on using the data and findings from Bord Bia audits, along with the research and advisory expertise in Teagasc, in conjunction with the findings of the SignPost Farm Programme, and engaging proactively with private agricultural advisory and extension services to develop Farm Sustainability Plans with the aim of developing a virtuous cycle of on-farm sustainability improvement. This will also involve increasing the practical application of Farmer Feedback Reports by farmers and advisors. Communicating sustainability messages in a coordinated and clear manner to farmers will be a key element of this partnership. Improved linkages between knowledge exchange, advisory services & sustainability assessments would also lead to the development of cooperation activities between farms led by innovation brokers such as advisors to manage natural resources such as biodiversity, water, soils and air.

ACTION 5

Further explore the health and sustainability benefits of grass-based food.

Bord Bia will build on the recently agreed grass-fed standards for dairy and beef. Ireland has a strong reputation on the international stage as a producer of sustainable grass-fed livestock-based products. This should tie in with research organisations exploring the health benefits of grass-based foods.

ACTION 6

Encourage companies and farmers that are not already signed up to Origin Green to urgently get on board.

The agri-food industry needs to incorporate sustainability into its business strategies and corporate governance frameworks. The EU Farm to Fork Strategy indicates an intention by the Commission to require the food industry to integrate sustainability into corporate governance strategies so it will be important to be ahead of this initiative. In this regard, Origin Green membership offers extensive support and advice and the most comprehensive, joined-up vehicle for a company to address these issues. Furthermore, a concerted effort should be made to encourage farmers who are not involved in the farm assurance schemes to join.

ACTION 7

Communicate credible, market relevant environmental and social sustainability credentials to trade customers and consumers in both national and international markets.

More efforts are required to improve the ability of sales and marketing teams to understand and communicate the benefits of sustainability when making claims in the marketplace. There is training and advice available to Origin Green members from Bord Bia in this regard, to support companies to differentiate and realise the commercial benefit in the global marketplace.

ACTION 8

Establish thought leadership and market insight platforms to contribute to, and better understand, evolving food sustainability developments in the marketplace.

Origin Green should incorporate additional forums to shape the discourse on emerging food and drink sustainability topics and support the evolution of food sustainability in Ireland via the Origin Green programme. This should include business leaders, sustainability and agricultural experts and intergovernmental organisations and NGOs focused on a common goal.

ACTION 9

Drive industry engagement with SEAI programmes such as the recently updated Exeed Grant Scheme and the Energy Efficiency Obligation Scheme to support companies to meet their energy saving targets.

ACTION 10

Increase focus on awareness building of sustainability supports among Enterprise Ireland's Food & Drinks clients.

Enterprise Ireland's suite of environmental supports, including the new Green Enterprise Fund, can support companies to ensure they scale and grow their businesses sustainably. Enterprise Ireland, working in tandem with colleagues in SEAI, Bord Bia, and other relevant Government Agencies and Departments, will support companies across the stages of the investment journey to achieve reduction in carbon emissions.





BOX 4: ORIGIN GREEN

Developed in 2012, Origin Green is the Bord Bia food and drink sustainability programme that drives sustainability improvements across the entire supply chain on a national level.

Origin Green collaborates with over 54,000 farms and 300 leading Irish food and drink companies to prove and improve sustainability; it is about measuring and improving on an ongoing basis. Independent accreditation and verification are built into every stage of the supply chain.

On-farm assessments constitute a key component of the Origin Green programme, which see more than 100 auditors undertake over 650 independent farm audits each week. Under the programme, over 300,000 carbon assessments have taken place on beef and dairy farms over a five-year period.

At the manufacturing level, participating companies commit to developing a multiannual sustainability plan that outlines robust, measurable targets in three key areas: raw material sourcing, manufacturing processes, and social sustainability. To date, member companies have set over 2,400 sustainability targets, delivering tangible results such as an 11% reduction in energy use per unit of output and a 17% reduction in water use per unit of output.

Despite the progress made, the environmental challenges and market requirements are mounting and Origin Green must continue to evolve to provide customers globally with the sustainability assurance they are looking for from their food producers and suppliers.



MISSION 2

Viabile & Resilient Primary Producers with Enhanced Wellbeing



Primary producers – farmers, fishers and forest owners – are fundamental to this Strategy and are the foundation of the entire sector. Primary producers’ economic viability is crucial not only in terms of their ability to make a decent livelihood and return for their endeavours, but also in helping to deliver on environmental and social sustainability. Very often, their incomes are volatile from year to year and at a low level for some enterprises. Primary producers are subject to the vagaries of the market and are very often price takers. With that in mind, this Mission focuses on the areas which offer the best tools for improving economic viability and resilience, areas that are within the control of primary producers themselves but also policies, approaches and technologies that they and others in the agri-food chain can implement to improve their overall economic standing.

Farmers can bolster their financial and economic sustainability by embracing new, diversified systems of agriculture, meeting standards required for greater premiumisation that can offer higher market returns and being rewarded for the delivery of a range of eco-system services. Future income sources may not be the same as those of today; they could range from the market to payment for carbon sequestration and storage, microgeneration of energy, and delivery of a variety of eco-system services. Fishers can continue on a path of sustainable economic development by managing the utilisation of sea-fisheries and aquaculture, and expanding and investing in technology to develop the industry and improve productivity. This Mission also envisages there being a place in Ireland’s agri-food sector for all types of primary producer whether full time or part time, big or small. A diversity of farming, fishing and forestry

systems offers the best approach towards achieving all forms of sustainability and one should not be considered better than the other.

The social sustainability of primary producers is all too often an over-looked dimension. This Mission aims to correct that by identifying a number of areas where social factors such as generational renewal, gender balance, education and training, health and safety, mental health and wellbeing and broader rural development can be improved on. Primary producers are the lifeblood of rural and coastal communities and their social sustainability therefore has to be a priority for all concerned. This mission also calls for greater recognition, respect and support for primary producers for their key societal role in addressing our climate and biodiversity emergency.

Negotiations on the new Common Agriculture Policy (CAP) are ongoing and the CAP Strategic Plan will provide in excess of €12 billion in funding to farmers and rural communities in the period from 2021 to 2027. Ireland has been consistent on the need for a strong CAP and has also stressed the need to ensure better environmental and climate outcomes for the CAP. Central to environmental ambitions is the protection of farm incomes and a just and inclusive transition.

The Common Fisheries Policy (CFP) is reviewed every 10 years and the next review is scheduled to be completed by end 2022 when the European Commission will report to the European Parliament and the Council on the functioning of the CFP. When the report has been presented, if any changes are required, the Commission will bring forward a proposal for an amendment of the CFP Regulation.

Ireland will be seeking that the upcoming review of the CFP must address the disproportionate impact on the Irish fishing industry by Brexit. The Seafood sector will continue on a path of sustainable economic and environmental development by carefully managing the utilisation of sea-fisheries and aquaculture. The new EU-UK Cooperation and Trade Agreement (TCA) will have a particularly significant impact on the sector. A Seafood Sector Taskforce has been established to examine the implications arising from the TCA for the sector and the coastal communities who depend on it. The Task force, involving seafood industry representatives and other stakeholders, will make recommendations on measures to mitigate the impacts of the fish quota share reductions, on the Irish fishing industry and on the coastal communities that depend on fisheries. In its interim report, the Taskforce recommends that a voluntary tie-up scheme be put in place for the period September to December for polyvalent vessels and beam trawlers directly impacted by the quota transfers under the TCA. The interim report also recommends a range of initiatives to address the quota reductions in the TCA. These recommended actions will be considered further by the Taskforce and will be set down in detail in the Taskforce's main report.

The European Green Deal, Circular Economy and Biodiversity Strategies, as well as higher health and environmental ambition in the Farm to Fork Strategy that will be reflected in the next common agricultural and fisheries policies, will have consequences for primary producers across the EU. Coupled with national policy developments, higher standards and constraints across a range of indicators will add to the cost of production. While all stakeholders

are committed to the policy direction, detailed assessments will need to take place as these policies are being finalised. Consideration will be needed as to where the burden of these costs will lie, with the primary producer, food distributors or processors, retail, food service, consumers or public funds. It is clear that primary producers alone cannot be expected to bear this cost.





GOAL 1

Improve the Competitiveness and Productivity of Primary Producers



Considering the wide variation in productivity and performance and the associated challenges and opportunities facing primary producers across the agri-food sector, a range of actions are recommended for each of the sub-sectors, as follows:

DAIRY

Dairy farming offers the highest return per hectare compared to other farm enterprises, and has expanded significantly in the last decade, improving the economic and social sustainability of many farm families and rural areas. However, there is an urgent need to address the negative environmental impacts associated with dairy expansion, and to address other societal concerns, in order to maintain the sector's reputation, profitability and sustainability in all its forms.

ACTION 1

Promote greater integration of the dairy and beef sectors, especially in relation to the production of beef coming from the dairy sector,

to ensure that there is a market outlet for male calves from the dairy herd, and to provide an alternative business option for beef farmers.

ACTION 2

Address societal concerns of relevance to the sector's reputation,

for example through measurable commitments to high standards of animal welfare and anti-microbial stewardship.

ACTION 3

Under the auspices of the 2030 process, produce a detailed plan by Q2 2022 to manage the sustainable environmental footprint of the dairy sector,

including minimising total emissions, while making a positive contribution to improved water quality and biodiversity, in line with government policy. Further details are included in Mission 1, Goal 1.

ACTION 4

Continue progress on genetics, including genomic breeding strategies focused on animal health and welfare, production efficiency and methane efficiency, and market suitability of all off-spring, including sexed-semen.

ACTION 5

Continue measurable improvements in animal health and welfare.

This has benefits both in terms of reputation and economic and climate efficiency.

ACTION 6

Address labour issues facing the sector, including implementation of the 'People in Dairy Action Plan'.

ACTION 7

Explore potential for the development of specific volatility and risk management measures, within both the private and public sector.

ACTION 8

Continue the move to higher-quality, value-added dairy produce, positioning Irish dairy as a premium grass-fed product with strong environmental credentials.

Opportunities exist to grow and develop new markets. The benefits arising should accrue proportionately to primary producers.

ACTION 9

Build a strategy for the development of new markets for Irish organic dairy products and encourage participation at farm level.

ACTION 10

Continue to work in collaboration across the sector.

The stakeholders will continue to meet and to engage strategically on all the key issues above in various fora, including the Dairy Forum and Dairy Sustainability Ireland.



BEEF & SHEEP

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

ACTION 11

Recognise the suckler herd as a key asset to Irish agriculture and agree an approach to its development,

including addressing productivity and efficiency challenges, taking into consideration environmental and other factors.

ACTION 12

Promote Irish Grass-Fed beef and lamb as premium products, nationally and internationally.

Increased farmer participation in the Beef and Lamb Quality Assurance Scheme is important in pursuing this premium market position. Opportunities also exist to grow and develop new markets, **including for organic lamb and beef.**

ACTION 13

Develop and support dairy calf-to-beef systems.

These have a number of advantages, including providing an alternative income stream for beef farmers; earlier maturing; and significant potential to increase genetic potential through the dairy-beef index.

ACTION 14

Under the auspices of the 2030 process, produce a detailed plan by Q2 2022 to manage the sustainable environmental footprint of the beef sector,

including minimising total emissions, while making a positive contribution to improved water quality and biodiversity, in line with government policy. Further details are included in Mission 1, Goal 1.

ACTION 15

Continue to drive improvements in breeding strategies for cattle and sheep,

focused in particular on genomics programmes which contribute to improved environmental and economic efficiency, and improved animal health and animal welfare.

ACTION 16

Continue improvements in pasture management:

key areas for progress include soil fertility and the promotion of better pasture management, including reducing chemical nitrogen use, increasing clover and multi-species swards and use of PastureBase Ireland.

ACTION 17

Continue measurable improvements in animal health and welfare. This has benefits both in terms of reputation and economic and climate efficiency.

ACTION 18

Increase targeting of farm income supports to environmental, economic and social sustainability.

Extensive farming practices can contribute to economic sustainability and the social and cumulative economic value of small-scale beef and sheep farming should also be recognised and valued.

ACTION 19

Continue to work in collaboration across the sector. The stakeholders will continue to meet and to engage strategically on the key issues facing the sector, as currently with the Beef Taskforce for example.

CASE STUDY: DAIRY CALF TO BEEF SYSTEMS

The Irish agri-food industry prides itself on being a pioneer in sustainability. Since the removal of EU milk quotas there has been an ever-increasing number of dairy and beef crossed calves coming from the Irish dairy herd. Recent research at Teagasc indicates that the profitability of beef farmers can be increased through the adoption of grass-fed dairy calf-to-beef systems.

A new Integrated Dairy Beef Demonstration Farm will be established to demonstrate key technologies in relation to grazing management, calf rearing and the use of high Dairy Beef Index sires as well as farm financial performance. This will be used as a benchmark for practicing dairy calf-to-beef farmers. It is anticipated that this farm will be set up in association with a dairy and beef processor as well as a social media partner that will disseminate information from this farm to the wider beef farming community.

The demonstration farm will be complemented by a National Dairy Calf to Beef Campaign to promote the adoption of best practices at farm level to increase the future sustainability of the Irish beef sector. The key technologies include grazing management, calf rearing and use of appropriate dairy beef genetics.



PIGMEAT & POULTRY

There are a small number of pigmeat and poultry producers, in a mainly intensive and commercially-driven sector. Key challenges include improving animal health and welfare, improving productivity and competitiveness, and addressing overall environmental footprint across GHGs, ammonia and water quality in particular. Stakeholders will continue to work collaboratively across the sectors to:

ACTION 20

Develop the sector both in terms of domestic market share for Irish-produced product and new export markets.

Developing the domestic market should include increased marketing & promotion activities and examining the issue of labelling.

ACTION 21

Continue to improve productivity in terms of breeding and feed input.



ACTION 22

Address specific environmental targets and actions for the sector,

encompassing GHG emissions reductions, including ammonia, and better energy efficiency, including renewables. Explore bioeconomy opportunities e.g. for the use of pig manure.

ACTION 23

Address wider societal concerns such as animal welfare, anti-microbial stewardship and food safety risks; for example by building on progress to date in tackling campylobacter in poultry, and salmonella in pigmeat.

ACTION 24

Develop measures to improve biosecurity, verify animal health and welfare standards and best practice, including through Bord Bia QA Scheme.

ACTION 25

Develop targeted supports and advice to these specialised sectors.

ACTION 26

Examine measures to improve financial and operational risk management.



The tillage and horticulture sectors are the most carbon efficient sectors of Irish agriculture and it is important that the area under cultivation in these sectors is at least retained, with an ambition to increase both.

TILLAGE

The tillage sector provides high quality grain to the animal feed industry and straw for feeding and bedding, while also making a significant contribution to the food and drinks sectors in the form of malting barley, milling wheat and oats for the breakfast cereals industry. While second to dairy in terms of economic viability at farm level, costs are high and there is room to improve competitiveness, efficiency, and to take advantage of new and emerging market opportunities, while also contributing to reducing overall environmental footprint particularly in relation to water quality and improving biodiversity.

ACTION 27

Stakeholders will work to develop the sector to take advantage of potential growth in:

1) high value output (malting barley, wheat, oats and rye) to distilling and brewing; 2) high value food markets such as oats (particularly organic oats), oils and salad & chipping potatoes; 3) meeting domestic protein crop demand for livestock diets. When

pursuing these areas of potential growth, it will be important to avoid conversion of extensive or biodiversity rich permanent pasture, unless it can be demonstrated to be not damaging to biodiversity, soil, water, climate and other environmental parameters.

ACTION 28

Continue the focus on soil management including nutrient use efficiency and soil quality.

A focus on the basics by adopting agronomic practices that optimise soil pH, soil structure, and soil organic matter. Encourage greater nutrient integration with other sectors through the use of organic manure in addition to a greater emphasis on cover crops and other initiatives to reduce soil erosion and nutrient loss. Implementation of this action should seek to synchronise with the objectives of action 5 in Goal 3 of Mission 1 (the National Soil Sampling and Analysis Programme and developing a National Soil Strategy).

ACTION 29

Research should continue in the effort of developing effective Integrated Pesticide Management techniques. This is a constant challenge for researchers as crop pathogens and pests continue to evolve and circumvent both genetic resistance and pesticide efficacy.

The increasing loss of Plant Protection Products (PPPs) is also a significant challenge and this will continue. Precision breeding techniques, if legislation permits, as well as developing pest management (or “Integrated Pest Management”) approaches will be required to minimise the impact.

ACTION 30

Stakeholders will consider aligning the Irish Grain Assurance Scheme (IGAS) with Origin Green.

ACTION 31

Investment in precision and other technologies will be required within the sector as they are both environmentally and economically sustainable.

The sector has traditionally been one of the leading adopters of new technology and this is envisaged to continue.

CASE STUDY:

UPROTEIN - UNLOCKING PROTEIN RESOURCE OPPORTUNITIES TO EVOLVE IRELAND'S NUTRITION



The UPROTEIN (Unlocking Protein Resource Opportunities To Evolve Ireland's Nutrition) research project is focused on the sustainable development and exploitation of existing and novel protein resources within the Irish agro-ecological system.

The potential of crop (grassland, cereals, legume, oilseed and niche crops) and marine resources will be examined as alternative protein sources, with post-processing biomass used to generate value added food and non-food streams, delivering circularity throughout the production system. UPROTEIN as a new food enterprise will co-exist with the Dairy, Meat and Cereal sectors. The project will leverage established nutritional and technological expertise to study alternative protein sources, selected on the basis of environmental, social and economic sustainability within the supply chain. It will generate protein resource opportunities for Ireland, to

create a diverse agri-ecosystem with a lower carbon footprint. This in turn has the potential to accelerate Ireland's path to becoming a global leader in the responsible supply of safe, nutritious and healthy food solutions and develop the next generation of smart protein foods which are cost effective, resource efficient, and nutritious. Proteins will be extracted from plants and these smart proteins will be used to create ingredients and products which are nutritious, trusted, environmentally friendly, and part of a secure and future-proofed supply chain. UPROTEIN is coordinated by Teagasc and collaborators include University College Cork, Queens University Belfast, National Universities of Ireland Galway and Maynooth, and University of Limerick.



U-PROTEIN

HORTICULTURE

While occupying less than 1% of total land, horticulture contains a diverse range of sectors, such as mushrooms, potatoes, field vegetables, protected fruit, protected vegetables, outdoor fruit, and amenity crops such as nursery stock, protected crops including bedding plants, cut foliage, outdoor foliage and bulbs, Christmas trees and turf grass. An expanded horticulture sector would make a valuable contribution to the Missions in this Strategy, particularly in realizing a climate-neutral sector by 2050. From carbon sequestration to enhancing biodiversity such as pollinators, horticultural systems offer many synergies and co-benefits between environmental, economic and social sustainability. However, the scale required, high start up costs, labour shortages and retail pressures pose challenges for the sector, but with a significant trade deficit and changing consumer trends, there are opportunities for import substitution.

ACTION 32

Develop a strategy to set out the road map for the horticulture industry to 2030,

taking advantage of the growing demand for fruit and vegetables, whole-foods and amenity; to increase production and consumption of Irish produce on the domestic market and, where possible, to take advantage of expanding opportunities internationally. The Strategy should seek to carry forward the environment and sustainability focus of the Agri-Food 2030 Strategy, particularly around the key themes of emission reduction, restoration of biodiversity and

climate neutrality. The strategy should also:

- i. Formalise specific environmental targets and actions for the sector, encompassing the maximisation of carbon sequestration.
- ii. Continue to address labour issues, including better use of automation technology and development and training opportunities for workers in the sector.
- iii. Promote and enhance collaboration within the sector through the producer organisation structure and with research providers. Given the fall in grower numbers and the increasingly competitive nature of retail markets, growers need to engage in greater collaboration to exploit market opportunities, combat the current structural control of the multiples and to meet the challenges and opportunities posed by UK exit.
- iv. Identify market opportunities including
 - a. focusing on the significant potential for import substitution
 - b. working with the health industry to promote the physical and mental health dividends that would accrue from increased consumption of fruit and vegetables
 - c. product innovation
 - d. small-scale market garden type horticultural enterprises (both organic and conventional), supplying Farmers' Markets, restaurants and other local food initiatives, for example
- v. Identify the required areas and resources for further research and development in order to enable innovation, technology adaptation, strategic development, new product development and alternative growing media.



FORESTRY

Accounting for around 11% of the total land area, significant potential exists to grow the area and make a very significant contribution to improving the Irish environment, particularly through carbon sequestration and storage, while also acting as a supplementary income stream for farmers. The sector is faced with a number of challenges, particularly around licensing, which are being considered in 'Project Woodland'.

ACTION 33

Develop a new Forestry Strategy for Ireland (see also Goal 4, Mission 1), including new approaches to improving the overall perception of tree planting on farms.

SEAFOOD

The national fishing fleet is made up of a diverse group of primary producers that includes small inshore vessels, along with medium and large offshore vessels. Aquaculture, comprising of finfish and shellfish primary productions, produce products that are highly valued in the marketplace and provide high value, year-round, jobs along the coast. The sector overall is challenged by the departure of the UK from the EU and the associated EU-UK Cooperation and Trade Agreement, while also faced with a number of environmental sustainability issues.

ACTION 34

The Minister for Agriculture, Food and the Marine has set up a Seafood Sector Taskforce involving seafood industry representatives and other stakeholders to provide recommendations on the appropriate measures that will best support the sector and the local coastal communities.

The EU-UK Trade and Cooperation Agreement (TCA) became applicable from 1 January 2021 as the UK officially exited the transition period. Quota transfers will begin in 2021 and on a phased basis will result in a transfer by Ireland of stocks worth €26 million in 2021 rising to €43 million by 2026 and each year after that. In proportionate terms this means that 15% of Ireland's quotas will be transferred based on

2020 prices. The effects are immediate, with 60% of those transfers to take effect from April. The cost of the final quota transfer by Ireland will amount to 15% loss of the overall value. The Task Force will examine the implications arising from the EU/UK TCA for the Irish Fishing industry and coastal communities particularly dependent upon it. It will, in particular, outline initiatives that could be taken to provide supports for development and restructuring so as to ensure a profitable and sustainable fishing fleet and to identify opportunities for jobs and economic activity in coastal communities dependent on fishing. The Taskforce will consider the extent to which all available funding streams could be used to address, to the extent possible, the initiatives identified and the State agencies to support those initiatives. The Task Force will also consider and recommend constructive actions that would help to alleviate the inequitable relative contribution of quota share by Ireland in the EU/UK TCA. In its interim report, published in June 2021, the Taskforce recommends that a voluntary tie-up scheme be put in place for the period September to December for the approximately 220 polyvalent vessels and beam trawlers directly impacted by the quota transfers under the TCA. The interim report also recommends a range of initiatives to address the quota reductions in the TCA. These recommended actions will be considered further by the Taskforce and will be set down in detail in the Taskforce's main report.

ACTION 35

The Seafood sector will continue on a path of sustainable economic and environmental development by carefully managing the utilisation of sea-fisheries and aquaculture, including:

- Expand and invest in fishing operations and gear technology to develop the industry and improve productivity.
- Manage non-quota stock particularly in the inshore sector to deliver maximum sustainable yield.
- Streamline the administrative procedure in the National Strategic Plan for sustainable aquaculture development. The aquaculture licensing system needs to be adaptive to technology advances and local environmental conditions during the lifetime of the licences and at renewal. These issues need to be addressed through legislative change to maximise market demand and growth in the Aquaculture sector.
- Encourage investment in seafood communities to allow for growth and long term economic and social sustainability. This will support a vibrant and growing local seafood sector and the economic and demographic health of rural coastal communities.
- The competition for space for inshore fisheries is greater than ever. Space within the marine sector is required by fisheries and aquaculture, but also in demand for shipping, marine leisure and, more recently, renewable energy. The increased level and diversity of activity in the marine space

highlights the need for efficient and co-ordinated management to avoid conflict and to identify, where possible, synergies both within and between. Ireland's future Marine Spatial Plan (MSP) will also impact on the inshore sector.

- Improve economic capability through training and broadening technical and business acumen of primary producers.
- Attract global investment in aquaculture technology. Promote Ireland as a knowledge base for aquaculture technology and research to attract investment on our knowledge base.

The sector has a significant number of specific national policies and strategies, including the EU Common Fisheries Policy, the National Strategic Plan for Sustainable Aquaculture Development, the Inshore Fisheries Sector Strategy, amongst others.





GOAL 2

Improve the Creation and Equitable Distribution of Value



Global value chains (GVCs) have changed the nature of production and specialisation around the world, including in agriculture and food. The agri-food chain is highly competitive with generally low profit margins. More market and price transparency can assist in strengthening bargaining power of primary producers, alongside regulation to ensure fair trading practices. There are also management practices within the farm gate such as quality assurance schemes or systems for producing products with particular characteristics (e.g. organic) that can add value, as can relationships within agri-food supply chains, at and beyond the farm gate (e.g. Producer Organisations, greater use of supply contracts). There is a low level of Producer Organisations (POs) in Ireland and a general underutilisation of EU quality labelling, particularly Protected Geographical Indications. Therefore, there is scope to improve the farmers' position in the value chain through these tools in particular.

In the longer-term, the extent to which the market provides a return for the primary producer, especially for high-standard, high quality produce, is a

fundamental question for the food system and agri-food policy.

Six areas have been identified for improving the creation and equitable distribution of value (note, Goal 4 in Mission 3 outlines actions for developing market opportunities and should be considered as also delivering on this present Goal):

1) THE UNFAIR TRADING PRACTICE DIRECTIVE

The EU Directive on Unfair Trading Practices in business to business relationships in the agricultural and food supply chain (known as the UTP Directive) is one element of a three-pronged approach by the EU Commission in its work towards a fairer and more balanced food supply chain and improving primary producers position in that chain. The other elements are:

- The simplification of the rules of producer/farmer co-operation
- The improvement of market transparency through the introduction of increased mandatory price reporting

These will be critically important in protecting and enhancing the place of primary producers in the value chain. The Department of Agriculture, Food and the Marine has transposed the directive into national legislation, and is progressing delivery of the Programme for Government commitment to establish a new office of a National Food Ombudsman (or equivalent), which will require primary legislation.

For seafood, Regulation (EC) No 1005/2008 establishes a Community system to prevent, deter and eliminate illegal, unreported and unregulated fishing (IUU fishing) to avoid unfair competition in the seafood market. This Regulation defines specific control and monitoring measures that aim to deter IUU fishing and prevent seafood caught illegally and unsustainably from being unfairly traded on the European market, ensuring fishermen abiding by the rules are not disadvantaged.

ACTION 1

Ensure that the UTP Directive is transposed in Ireland and the office of the National Food Ombudsman (or equivalent) is established, with appropriate powers.

2) MARKET AND PRICE TRANSPARENCY

The European Commission has introduced a number of measures to improve the dissemination of agri-food market information, analysis and forecasts, including EU agriculture dashboards and EU market observatories. Additional mandatory price reporting will take place from 2021. In Ireland, greater price transparency is being supported through the development of initiatives such as the “Beef Pricewatch” and detailed weekly price reporting, helping to reduce information asymmetry at primary

producer level. Bord Bia has recently developed a new beef market price index model. Further initiatives in this regard will be considered by the Beef Taskforce. The European Market Observatory for fisheries and aquaculture (EUMOFA) is a market intelligence tool on the European Union fisheries and aquaculture sector, developed by the European Commission. It aims to increase market transparency and efficiency, analyses EU market dynamics, and supports business decisions and policy-making.

ACTION 2

Ireland will engage fully with the Commission work and continue to develop national initiatives on market and price transparency.

3) CO-OPERATIVES & PRODUCER ORGANISATIONS (POs)

The co-operative structure is well established in the Irish dairy sector and key farm & rural-based services. While the co-operative structure is well established in livestock marketing, there are currently no co-operatives established in beef processing in Ireland. Co-operatives are autonomous enterprises, democratically owned and controlled by its user members that operate for the benefit of its user members. Co-operatives can significantly strengthen the producers' position in the supply chain. The

co-operative structure of the Irish dairy sector has ensured that it has developed a significant degree of vertical integration with its farmer members including the provision of financial, advisory and technical supports. Producer organisations play an important role in horticulture, but there are currently no recognised producer organisations for the arable crops sector and only two in the beef sectors. By comparison, the EU has approximately 178 POs in the beef and veal sector. This leaves those primary producers more exposed to being price takers. Cooperatives and registered POs can benefit from exemptions from EU competition rules for certain activities, such as collective negotiations on behalf of their members, planning of production or for certain supply management measures. DAFM is actively engaging with potential groups to support the establishment of beef producer organisations and co-operatives in addition to providing financial support for their establishment. Fishery and Aquaculture Producer Organisations are a cornerstone of the Common Fisheries Policy (CFP), in achieving its objectives of ensuring that fishing and aquaculture activities are environmentally sustainable. These are managed in a way that is consistent with the objectives of achieving long-term economic, social and employment benefits, and of contributing to the availability of food supplies. In Ireland there are five Fishery POs and one Aquaculture PO which must develop and implement Production and Marketing Plans in accordance with the Common Marketing Organisation (CMO) regulation. It is important that their role is further developed and enhanced and fully supported by the EU and State.

ACTION 3

Support the establishment of co-operatives and Producer Organisations across all sectors of farming and enhance the role of the fishery producer organisations co-operatives.

4) ORIGIN GREEN / QUALITY ASSURANCE (QA) SCHEMES

Quality Assurance plays a fundamental role in promoting food and securing a premium position in the market. Bord Bia operates a number of independently accredited QA schemes, including beef, lamb, dairy, pigmeat, poultry, eggs, feed, fresh produce, and ornamental plant producers. While maintaining their core focus on quality, QA schemes also have a strong focus on sustainability and are particularly important in providing customers of Irish food with proven credentials all along the supply chain. Furthermore, QA schemes provide an opportunity for customers to reward or incentivise the primary producer through for example, paying bonuses for QA membership, or to insist on membership as a prerequisite for supply. In relation to seafood the national certification schemes administered by BIM (i.e. Certified Quality Aquaculture (CQA) Standard), participation in Fishery Improvement Projects (FIPS) for key species, as well as external certification such as MSC, gives Irish Seafood a high level of quality assurance. BIM Certified Quality

Aquaculture standards have achieved benchmarking against the Global Seafood Sustainability Initiative requirements. Organic certification along with the MSC certification for both rope and bottom grown mussels are used by the aquaculture sector to demonstrate their sustainability credentials and salmon are exclusively produced to the EU Organic Certification Standard. There should be investigation into the feasibility of Global Sustainable Seafood Initiative (GSSI) for certain fisheries.

Providing independently verified evidence of quality gains on farm and fisheries maintains high standards of quality in production, as well as bolstering Ireland's reputation in international markets.

ACTION 4

All farmers and seafood operators will participate in a quality assurance scheme where possible.

Sectoral stakeholder groups will consider how to address barriers to entry and increase participation.

ACTION 5

Quality assurance schemes will be continuously reviewed and updated to ensure they are in line with enhanced expectations in areas such as environmental performance, food safety standards, the animal health and welfare sustainability credentials of seafood and market requirements.

5) CONTRACTUAL ARRANGEMENTS

Forward contracts are a relatively new development in Irish agriculture. The tillage sector has made use of them for malting barley, while the dairy industry has made good progress in making fixed price contracts a feature of the producer/processor relationship. Such contracts are less common in the other sectors. In the beef sector, a recent initiative involving guaranteed-pricing model with various bonuses may be a prototype for primary producers. There are a range of contractual arrangements utilised in the fishing industry such as direct selling, a varying range of contracts both direct and indirect, sales organisations and auction hall sales. The fishing industry would benefit from a review of these arrangements to ascertain if improvements in the first sale price can be achieved for the different fleets segments.

ACTION 6

Promote and develop contractual arrangements to bring more production and price certainty to primary producers.

ACTION 7

The fishing industry should explore these arrangements to ascertain if improvements in the first sale price can be achieved for the different fleet segments.

6) CERTIFICATION, ACCREDITATION AND GEOGRAPHICAL INDICATORS

The Geographical Indicators (GI) 'Protected Designation of Origin' (PDO), 'Protected Geographical Indicators' (PGI) and 'Traditional Specialities Guaranteed' (TSG) are important EU Quality Schemes designed to identify and protect the names of quality EU agricultural products and foods and confer added value. EU research has confirmed consumers are willing to pay a higher price for GI foods which are unique and differentiated from non-GI food. In comparison to many other European countries, Ireland has relatively few (seven) of these designations whereas Italy has almost 300 product types registered. Products sold under GIs are estimated to represent around 5.7% of EU food and drink production and 15% of EU food and drink exports. There is market demand for livestock products that are 'grass-fed' and which live up to high standards of animal welfare and sustainability, which consumers associate with quality, natural and welfare friendly production systems. Most Irish livestock output is grass-fed. The sector, through Bord Bia, has been progressing certification and branding. BIM Certified Quality Aquaculture standards have achieved benchmarking against the Global Seafood Sustainability Initiative requirements. Organic certification along with the MSC certification for both rope and bottom grown mussels are used by the aquaculture sector to demonstrate their sustainability credentials. Salmon is exclusively produced to the EU Organic Certification Standard, one of the few Irish food products to have reached this scale in organic production. GI status has proved important to Irish

spirits categories, particularly in protecting from unfair competition from infringing products in export markets. For example, with substantial funding from industry, the Irish whiskey category has successfully secured protection in markets accounting for 85% of global sales, with enhanced scope to tackle infringing products.

ACTION 8

Support food producers to apply for Geographical Indicators and other quality indicators as a way of adding value.

ACTION 9

Continue the development of grass-fed certification and branding, including building on research into the nutritional and other benefits of grass-fed output.

The benefits arising from any premiumisation should be passed back proportionately to primary producers.



CASE STUDY:

GEOGRAPHIC INDICATORS (GIs) - WEST CORK DISTILLERS

West Cork Distillers is one of Ireland's oldest independent distilleries.

Initially located in Union Hall, West Cork Distillers moved to a 12.5 acre facility in Skibbereen in 2016. Distillation, maturation and bottling all take place on the one site which operates 24hrs a day, seven days a week, employing circa 120 people. The entire Marsh Road facility in Skibbereen is GI verified for the distillation, maturation and bottling of Irish whiskey. West Cork Distillers exclusively uses Irish grain for the production of its Irish whiskey, principally sourced from local Cork farmers and malted by the Irish Malting Co. in Cork. West Cork Distillers produces its own brand whiskey, gin and vodka which are sold in almost 70 countries globally and also partners with retailers globally to produce own label Irish whiskey. The GI verification is of great help in getting access to international territories and enhancing the credibility and quality-focused image of Irish whiskey.



GOAL 3

Increase Primary Producer Diversification & Resilience



While Ireland has a comparative advantage in grass-based livestock production, there are advantages in working towards a more diversified land-based agri sector, sustainably producing animal and plant-based food and biobased products such as timber, delivering a range of eco-system services, and, where feasible satisfying domestic demand. An over-reliance on any one sector could expose the agri-food sector to considerable economic and environmental risks for the future. Ultimately, diversification has the potential to make individual farms more sustainable and resilient from all three perspectives of sustainability - economic, environmental and social.

One type of diversification which is widely practised on Irish farms is to have a source of off-farm income. On around half of all of farms, the farmer and/or spouse has off-farm employment, while others continue to farm when in receipt of other payments such as a pension. Consequently 34% of NFS farms are 'sustainable' due to off-farm income. These farms continue to make a valuable contribution to the agri-food sector, while providing an economic, environmental and social benefit both to the farmers themselves, their household and the wider community.

In terms of on-farm diversification, many farmers are already engaged in this, but there is significant

potential for more and some of those opportunities in the period to 2030 are highlighted here. It is important to note that there is a relatively low level of interest amongst farmers to diversify their farm enterprise, although this is changing. As a result, primary producers may need further education and encouragement to consider some of the options specified here.

ORGANIC FARMING

By comparison with other EU member states, the area under organic production is very low in Ireland, at less than 2% of utilisable agricultural area (UAA) compared to over 7.5% in the EU. Organic farming can make a very valuable contribution to primary producer viability, but it also offers strong potential to help meet the ambition of the agri-food sector becoming climate neutral by 2050, with many additional co-benefits for water and air quality and biodiversity. The market for organic food in Ireland is growing and mirrors a growing trend right across Europe. The "Review of Organic Food Sector and Strategy for its Development 2019-2025" highlighted the areas in deficit and having market potential as being horticulture, tillage, dairy and poultry. Notwithstanding the fact that a large proportion of the total organic tillage crop is dedicated to oats, there is insufficient supply to meet demand. Furthermore, the insufficient supply of organic cereals and proteins is inhibiting the growth of the organic dairy, meat, and aquaculture sectors.

Salmon is the most economically significant aquaculture sector and is exclusively produced to the EU Organic Certification Standard. This standard is recognised by international markets and valued at over €100 million Salmon is exported to the EU, North

America and the Near and Far East. This has great potential to grow with investment.

ACTION 1

The recommendations in the "Review of Organic Food Sector and Strategy for its Development 2019-2025" should continue to be implemented and reviewed, including taking on board the new EU Organic Action Plan and its three axes of boosting consumption, increasing production, and improving the sustainability of the sector.

All stakeholders should re-double efforts to exploit opportunities in organic horticulture, tillage (oats in particular), dairy and poultry. In addition, Teagasc should establish organic grassland demonstration and tillage farms and conduct a competitiveness analysis of Irish organic farming. Increase the availability of advisors and knowledge exchange practitioners with experience and expertise in organic farming, including the provision of tailored advice for different land types and production systems.

ACTION 2

Continue to support the organic sector to achieve at least 7.5% of Utilisable Agricultural Area under organic production by 2030.

CASE STUDY:

ORGANIC FARM - ROCK FARM SLANE, CO. MEATH



Rock Farm Slane has been certified organic with the Organic Trust since 2010. It forms part of the Slane Castle Estate, best known for its legendary rock concerts and now also home to Slane Distillery. The farm and agritourism business is run by Alex and Carina Conyngham, whose family have lived on the estate since 1703.

Rock Farm Slane produces organic vegetables, fruit, beef, pork, poultry and eggs. Its primary route to market for its produce was traditionally to local restaurants but this was severely hit by COVID-19 in early 2020. In response, they pivoted to create a successful weekly farmers market and box scheme through Neighbourfood, selling their own produce and also supporting other local artisan producers. The farm sold 230 organic bronze turkeys direct to consumers for Christmas 2020 and expect to build on this further in 2021.

"Alex and I are passionate about the organic movement and wanted to create an eco-tourism business on the farm that would allow people to get closer to both nature and food production," said Carina. "The ethos of the farm is to stay productive while conserving and enhancing the landscape and its biodiversity and future plans to process meat on-site will be another step towards self-sustainability. We also have a special interest in conserving rare breeds and rear both Dexter beef and Tamworth pork in addition to crosses for improved meat quality."

For more information visit www.rockfarmslane.ie

Alex and Carina Conyngham,
Rock Farm Slane



FORESTRY AND AFFORESTATION

The significant supports available to support afforestation can provide sustainable income streams in addition to the sale of timber and forest products. Adding forestry to the farming mix can also be achieved on many extensive farms without necessarily impacting on the drystock enterprise. Agro-forestry combines forestry and agriculture in a mutually beneficial way on the same land, thereby providing additional sources of sustainable on-farm income.

Multiple forms of afforestation exist, many of which take in complementary farming activities. While afforestation offers very significant economic opportunities for primary producers to diversify and enhance their income and viability, there are obvious and significant co-benefits for environmental sustainability.

ACTION 3

See Goal 4 of the Mission on “A Climate Smart, Environmentally Sustainable Agri-Food Sector”.

THE BIOECONOMY

The new bioeconomy offers significant opportunities for primary producers to diversify their farming and fishing systems and improve their income and viability; it will also form an integral part in Irish agriculture and seafood becoming more circular and environmentally sustainable. It is considered in more detail in the Mission ‘A Climate Smart, Environmentally Sustainable Agri-Food Sector’.

ACTION 4

See Goal 6 of the Mission on “A Climate Smart, Environmentally Sustainable Agri-Food Sector”.

HORTICULTURE

Given current trends such as increased consumer demand for plant-based foods, dietary recommendations around increasing consumption of fruit and vegetables, increasingly challenging growing environments for horticultural crops in some countries due to climate change, and the need for Irish agriculture to diversify, opportunities exist to expand this important sector and these are likely to intensify over the period to 2030.

ACTION 5

See Goal 1 of the Mission on “Viable and Resilient Primary Producer with Enhanced Well-Being”

OTHER OPTIONS

There are also a range of other options for diversification, including:

- The growing national and international trend towards consumption of more fruit, vegetables and whole-foods opens new opportunities to expand existing commercial crop (horticultural and arable) production and the growing of new commercial crops including food protein crops (see also Goal 1, actions 27 and 32). Potential exists for Ireland to increase domestic production and reduce reliance on imported vegetables, protein crops and other grains. There is also significant interest among craft brewers in sourcing malt produced from heritage malting barley varieties. Potential also exists in heritage grains.
- Whilst the vast bulk of the diet of livestock is grass based, Ireland has a significant reliance on the importation of protein crops and their derivatives in the manufacture of concentrate rations which are fed over the winter months. In this context, reducing Ireland’s dependence on imported protein crops would have multiple benefits.
- Irish agriculture could also play an important role in decarbonising other sectors of the economy through the production of bioenergy and biogas.

- Other options also include regenerative farming, contract rearing, dairy-beef systems, rural tourism, eco-tourism, contracting, artisan food production, consultancy, renewable energy, amongst others. In this regard, the Teagasc Options Programme has been active in advising and mentoring farmers.
- Seafood will continue to aim for sustainable growth in terms of value-added products in the food ingredients and in the health and sport nutrition markets. Seafood raw materials can be used to extract high-end proteins, oils and calcium for use as food ingredients, nutritional supplements and later medicinal ingredients. Other products such as marine collagen and gelatine can also be extracted. This diversification maximises seafood raw material that it mostly used for low value fishmeal. The aim should be to convert this low value raw material into high value food ingredient and novel products which meet the demands of the international marketplace for high quality, healthy marine protein and mineral products.

ACTION 6

Develop a protein strategy to reduce dependence on imported protein crops and open up opportunities in the bioeconomy a range of research projects are ongoing nationally and internationally, particularly in the area of ‘smart-proteins’, that could inform such a strategy.

ACTION 7

Communicate the broad range of options for diversification more effectively to farmers, who will need support to adopt them.

The main providers of advisory and knowledge transfer services should develop dedicated ‘Diversification Services’ (see also Action 14).

ACTION 8

Broaden the seafood product range and develop seafood protein leadership.

This growth should also extend into the marine proteins, minerals and ingredients and the potential to maximise value from further processing of raw materials. Fish products have the potential to drive added value as key input ingredients.

ACTION 9

Using Just Transition Principles, build socio-economic resilience through diversification, including by building on Action 13 of Ag Climatise,

which aims to review and analyse the full suite of land diversification options that offer economic opportunities while also reducing and/or sequestering emissions (note, this will need to link closely to the actions contained in Mission 4 Goal 3 ‘Develop a Dynamic Knowledge Exchange Environment’).

CASE STUDY: THE NAGLE FAMILY



Pat Nagle, his son Oliver and their families live in Corofin, Co. Clare. Their home farm lies on the banks of the River Fergus, while they also manage a 'winterage' farm in the Burren, where their 35 cow suckler herd spends the winter. The Nagles have a great knowledge of, and passion for, farming which has been accumulated over many generations. The weanlings they produce on the winter pastures and summer callows command good prices at Autumn sales, though, as with many of his peers, Oliver needs to supplement this income with an off-farm job.

Long-term participants in REPS, AEOS and GLAS schemes, the Nagles are very conscious of the importance of maintaining good animal welfare and environmental standards on their farm. As enthusiastic participants in the Burren Programme, they have carried out a range of actions to improve their farm's

environment – repairing stone walls and installing locally-made gates, protecting springs to improve water quality, removing encroaching scrub, and adopting new grazing and feeding regimes. This has resulted in a major increase in the 'ecosystem services' – cleaner water, more flowering plants, beautiful landscape - being delivered on their farm, for which they receive an annual 'results-based' payment (better environmental field scores yield higher payments).

Pat and Oliver regularly host visitors to their farm – tourists, teachers, students and other farmers. *'People are fascinated to learn how we farm here and how we can do it in a way that benefits us and our environment'*. In recognition of their work, Oliver won the National 'Farming Together for Biodiversity' Award and became a 'Farming for Nature' Ambassador in 2019. The Nagle's view their new, broader farming role with pride. *'What we are doing respects the work of generations past and gives more options to the youngsters coming after us. We're more than happy to give society what they want as long as we can make a living while doing so'*.

Pat Nagle



GOAL 4

Improve the Social Sustainability of Primary Producers



Social sustainability of primary producers is influenced by factors within the agri-food sector, but equally by factors outside the sector, such as the performance of the wider rural and coastal economy. For farming, the family farm model is key to social sustainability. A number of aspects feed into improving the viability and well-being of primary producers and the broader rural community: the influence of age and the challenge of generational renewal; attracting new entrants, ideas and innovation; gender balance; LGBTI+ inclusivity; education and training; health and safety; mental health and well-being and rural development generally. Ultimately, addressing these will enhance the quality of life of primary producers and make an important contribution to their overall sustainability. The actions listed here will need to be supplemented with bottom-up approaches by stakeholders in the sector across all these areas.

CROSS-CUTTING

ACTION 1

Teagasc Sustainability Reporting should broaden to incorporate issues such as: generational renewal and collaborative farming models; gender balance; diversity and Inclusion; education and training; and health and safety (including incidence of farm accidents, stress and rates of isolation). The new 'Whole Farm Sustainability Planning Service' to be offered by Teagasc should include social sustainability measures.

ACTION 2

Protect and enhance cultural heritage, physical and intangible, which is an important source of wellbeing and of broader social sustainability of rural areas.

GENERATIONAL RENEWAL

Generational renewal of primary producers is critically important to ensuring the future viability and social sustainability of the Irish agri-food sector and of rural Ireland. In addition, young farmers and fishers tend to be early adopters of new technologies and practices, which can act as a catalyst for others to follow. It is important to recognise that there is more to generational renewal than incentivising young farmers and that it is equally important to consider older and retiring farmers.

ACTION 3

Continue to provide appropriate CAP and CFP supports to encourage generational renewal.

ACTION 4

Pursue progressive taxation policies, especially to promote land mobility and assist succession, including the early inter-generational transfer of farms, to support both younger and older farmers.

ACTION 5

Support and further develop collaborative farming models.

ACTION 6

Ensure adequate access to finance for young farmers and fishers in the context of access to finance generally.

(See also Goal 5, Action 3 in Mission 4 “An Innovative, Competitive and Resilient Agri-Food Sector, Driven by Technology and Talent”).

ACTION 7

Promote the diversity of careers in agriculture and seafood and address negative perceptions of farming and fishing.

(Note, this is closely linked to Goal 6 in Mission 4 ‘An Innovative and Competitive Agri-Food Sector, Driven by Technology and Talent’).

GENDER BALANCE

The trend in the proportion of workers in the primary agriculture, forestry and fishing sector that are female has only increased very slightly, rising from an average of 12% in 2000-2009 to 14% in 2010-2019. Women are therefore very under-represented in the sector. The actions outlined here should be considered in conjunction with those proposed in Goal 6, Mission 4.

ACTION 8

Promote women’s participation in farming through KT Groups facilitated by a female advisor.

This is in keeping with the spirit of the KT Programme where like minded farmers who experience similar challenges and opportunities form groups.

ACTION 9

Hold a National Dialogue on Women in Agriculture.

ACTION 10

Capture and publish gender data on policy implementation e.g. participation by women in schemes and measures.

ACTION 11

Represent the agri-food sector in the development of the next National Women and Girl’s Strategy (with the Department of Children, Equality, Disability, Integration and Youth) due to be published in 2022.

DIVERSITY AND INCLUSION

ACTION 12

Promote LGBTI+ inclusion and combat isolation.

Primary producers are a diverse community just like any other cohort. All people, regardless of race, gender, ethnicity, age and sexual orientation, are necessary to build strong, thriving rural communities and should feel welcome and valued. All stakeholders should work to improve visibility of LGBTI+ people and issues while simultaneously working to reduce isolation.

EDUCATION AND TRAINING

ACTION 13

Ensure education and training course content keeps up with the changing demands of farming, forestry and seafood.

(e.g. managing staff, technology training, best practice in environmentally and socially sustainable farming, forestry and seafood production, etc)

ACTION 14

Promote education and training including life-long learning and peer to peer learning and peer to peer learning by continuing to support young trained farmers and seafood workers.

- a. Examine the feasibility of establishing a CPD framework for young trained farmers / seafood workers.

ACTION 15

Empower farmers to become educators, trainers and leaders in areas such as environmental sustainability wherever possible.

Peer to peer learning can be impactful and routes to this include through discussion groups, farm walks and networks such as Farming for Nature

HEALTH AND SAFETY

ACTION 16

Introduce mandatory health and safety skills training for all those working on farms, particularly in the areas of livestock handling and machinery.

This could potentially follow the 'Safe Pass' example for construction sites. While mandatory safety training exists for the fishing industry there is a need to develop and redefine the culture of safety in the seafood industry through increased education and communication campaigns.

ACTION 17

Enhance awareness of health and safety throughout the sector, including among farm families and schools.

Include health and safety training as a component of existing and new schemes. Develop education, awareness and communication campaigns, across various media platforms, targeted at high risk cohorts, particularly on the main causes of accidents and fatalities.

ACTION 18

LEAN programmes will be mainstreamed to all primary producers.

Pilot initiatives have demonstrated that the application of 'LEAN' principles on-farm not only deliver greater efficiencies and financial savings, but lead to improvements in farm safety, better resource efficiency, including time, as well as reduced stress and physical labour.

MENTAL HEALTH AND WELL-BEING (INCLUDING ISOLATION)

ACTION 19

Continued roll-out of actions in the Teagasc/Mental Health Ireland manual ‘Coping with the Pressures of Farming’ by both public and private advisory service, and the National LGBTI+ Inclusion Strategy and the National Wellbeing Framework and engage with the Roadmap for Social Inclusion.

In addition, advisory and KT providers should enhance their rural resilience services with a focus on farmer well-being. Develop programmes to support the health and wellbeing of the seafood sector and communities.

ACTION 20

Continue to support the Farm Animal Welfare Advisory Council’s “Early Warning/Intervention System”,

which provides assistance to farmers where they may be experiencing problems that may lead to animal welfare difficulties, consistent with the theme of One Health, One Welfare.

ACTION 21

Create social opportunities for primary producers within their localities (such as discussion groups, farm walks, cultural and heritage events, men’s sheds, etc.)

ACTION 22

Continue to promote “social farming”.

Social Farming supports placements on a family farm, using the natural assets of the people, the place, the activities and the community to support a person to achieve some of their own chosen goals.

RURAL DEVELOPMENT

ACTION 23

Government will continue to focus on Rural Development;

The Government has published a new rural development policy, Our Rural Future 2021 to 2025. It builds on and goes beyond the Action Plan for Rural Development 2017-2019 by adopting a more strategic, ambitious and holistic approach to investing in and maximising opportunities for rural areas. There is an increased understanding nationally and

internationally that rural development is integrally linked to policies across a wide range of areas including spatial planning, enterprise growth, job creation, social cohesion, community development, public services, communications infrastructure, agriculture, the marine, climate adaptation, tourism, heritage, health and leisure. Our Rural Future contains fourteen actions that relate to agriculture, the marine and forestry. For example, there is a commitment to encourage and support Local Authorities to expand the number of farmers’ markets, farm shops and community-owned markets. The Department of Agriculture, Food and the Marine will work with the Department for Rural and Community Development and others, including the agri-food stakeholders, to deliver this framework for the economic and social development of rural areas over the next five years.

ACTION 24

Rapid roll-out of the National Broadband plan,

(including broadband connection points and digital hubs) will be critical to realising many of the actions in this Strategy – see Mission 4, Goal 4, action 6.

ACTION 25

DAFM will ensure that the contribution of the entire agri-food sector to the economic and social fabric of the country is recognised in public policy.

CASE STUDY: ON FEIRM GROUND

The National Men's Health Training Initiative was commissioned to develop "On Feirm Ground" by the Department of Agriculture, Food & Marine, the Department of Health and the HSE to examine how agricultural advisors might be trained to engage with and support farmers on health issues. With additional Walsh fellowship research funding, this mixed-methods study, based at IT Carlow, has developed a bespoke train the trainer farmers' health training module to equip frontline agricultural advisors with the knowledge, skills and competencies to engage and signpost farmers on health & wellbeing issues, and mainstream a health promotion/prevention focus into farming discussion groups.

The project commenced in 2019 with a formative evaluation, which consulted with key stakeholders (farmers, agricultural bodies, advisors) in order to provide clear, actionable recommendations to inform the design and rollout of the training programme. Overall, there was overwhelming support in favour of advisors assuming a health role, with many seeing it as a natural extension of their principal role and as something that was already happening organically.

The evaluation found that, in order to be effective, the proposed farmers' health training programme should be positioned as part of a more holistic, integrated and streamlined approach to address farmers' health; delivered in tandem with other education, training, and service delivery initiatives; backed up by a high-level implementation strategy; based on collaboration and partnership between all relevant stakeholders; underpinned by research and a robust evidence base; and linked to other community/social events designed to combat isolation and restore the social fabric of rural communities.



MISSION 3

**Food which is Safe,
Nutritious and
Appealing, Trusted
and Valued at Home
and Abroad**



Ireland's agri-food system, including its farmers, fishers and food businesses, play a vital role in the daily lives not only of the Irish population, but millions more across the globe. Exporting around 90% of output and in turn feeding and nourishing people at home and abroad, the sector has a lot to be proud of. Indeed, its role in ensuring safe, secure food and drink supplies was brought to the fore during the COVID-19 pandemic, and these have re-awakened consumer appreciation for where their food comes from and how it is produced, processed, distributed and sold.

Food security, food safety and nutrition are key components of Sustainable Food Systems, particularly the link between food and health. A nutritious, balanced diet appropriate to all life stages, in conjunction with appropriate lifestyle choices, contribute to positive health outcomes. It is important that the sector contributes to ensuring coherent food and health policies that deliver improved health outcomes.

National and international consumer and trade customer trends and expectations are in a constant state of flux and are complex. Notwithstanding this, one aspect that could be considered a constant is an expectation that the food and drink they sell or consume is safe, traceable and authentic, produced, processed, and sold in a transparent, ethical manner. Ireland's agri-food sector has a duty to meet these standards and expectations and while working off a strong base, must evolve to keep up with rising demands in these areas.

Given its export orientation and with a supply of rich, high quality primary produce from land and sea, food and drink companies are a critical element of Ireland's economy and some have developed into global leaders in their field. However, they operate in competitive markets and for this reason, the need for in-depth consumer insight, and the creation of value added through innovation and product differentiation, is hugely important, including in the context of returning a better economic return to primary producers.

Tremendous progress has been made in the last decade in expanding the reach of Irish food and drink to consumers across the globe. Combined with traditional markets closer to home, Ireland's agri-food sector can continue to play its part in contributing to global food and nutrition security, while also delivering economic prosperity for the sector across rural and coastal Ireland. Selling into international markets is a significant challenge, and the sector must strive to be fit and ready to develop and capitalise on business opportunities. A fair, balanced,

and rules-based international trading system is also a key enabling factor in this. Evolving consumer trends in the domestic market, accelerated during the Covid-19 pandemic, will also open new and exciting opportunities for businesses in the coming decade.



GOAL 1

Prioritise Coherent Food and Health Policies to Deliver Improved Health Outcomes



In the wake of the COVID-19 pandemic, there is likely to be a reconsideration of how society and the economy operate, including the fundamental importance of health. As part of this process, the issue of food and health should be brought to a new level of political and policy priority. This will require both a whole-of-government and a whole-of-society approach. Citizens, consumers, the food and drink sector in all its constituent parts, and government structures, must all see how they are part of a vision to deliver on improved food systems and health and what role each of them can play. A combination of regulation, voluntary codes of practice by industry (e.g. product reformulation), education and awareness raising, and community mobilisation will be part of a societal and behavioural change agenda, with the roles and responsibilities of each actor clearly set out.

A number of actions in food and health policy are identified where there are synergies and co-benefits which, if implemented, will deliver health benefits to the population. This should be part of a national conversation about securing the nation's future health, with the issue of food and health playing a central role.

Actions (see also actions for Goal 3):

ACTION 1

Improve coherence of policies for food, health and nutrition through the establishment of a high-level group co-chaired by the Departments of Health and Agriculture, Food and the Marine.

This should act as a starting point for the development by Government of a National Food and Health Policy. There is already a substantial agenda where the work of both Departments overlap, including aspects of Healthy Ireland and the National Obesity Strategy. These various initiatives should be advanced through effective citizen engagement and informed by scientific evidence and expert advice and input from stakeholders representing all aspects of the food and health systems. From this process, clear guidance on sustainable healthy diets that is science and evidence-based should be published for different audiences.

ACTION 2

Ensure that the healthy and sustainable choice is made as accessible to consumers as possible.

Great efforts in this regard have been made in recent years and these should be intensified. Food processors, food service operators and retailers influence consumers' dietary choices through the types and nutritional composition of the food they produce and sell, their choice of suppliers, production methods (including primary production systems) and packaging, transport, merchandising and marketing practices. Nutritious foods should also be affordable and acceptable from a sensory (flavor and texture) and cultural perspective to consumers.

ACTION 3

Promote best practice on labelling.

Farm to Fork includes ambitious proposals for harmonised mandatory labelling; including front of pack nutrition labelling; as well as enhanced origin labelling; and a sustainable food labelling framework. Ireland should contribute positively towards this workstream, ensuring that labelling initiatives are evidence based, contribute to greater consumer awareness and knowledge, but without creating unintended barriers to trade. Bord Bia should also follow this approach in relation to standards for

voluntary labels such as the Q-mark and grass-fed logos. Successful pilot projects testing blockchain technology to enhance traceability across supply chains has been carried out by BIM. It is intended to incorporate this in future seafood sustainable assurance initiatives. Blockchain and other digital technologies offer significant potential for the whole agri-food sector.

ACTION 4

Agree a stakeholder Roadmap for Food Product Reformulation.

Self-regulation has been the primary approach to product reformulation in the Irish food industry, where good progress has been made in recent years.

ACTION 5

Develop public procurement policies to promote healthy and sustainable diets, particularly in schools and public institutions.

ACTION 6

Continue to invest in the food, health and diet/consumption systems research required to generate the evidence base to inform our national policies.



CASE STUDY:

VITAMIN D ENRICHED MUSHROOMS



Monaghan mushrooms have a passion for sharing the benefits of mushrooms with the world. Employing over 3,000 people, the company provide a full range of fresh mushrooms for retail and foodservice customers, supplying many of the world's top grocery retailers.

Considering the health implications of vitamin D deficiency, and from consumer insight research, many people are now looking for alternative natural ways of introducing vitamin D to their diet. By introducing specific exposure to ultraviolet light in the production process, Monaghan Mushrooms have developed a mushroom with enhanced levels of Vitamin D. Mushrooms are the only fruit or vegetable source of this critical vitamin and are one of the very few non-animal sources of vitamin D too, making them a valuable food source in a balanced, nutritious diet.

This innovation that adds value to an existing product but also responds to a human nutrition need has been a positive business development for Monaghan Mushrooms with the company observing an increased consumer demand for their mushrooms that have been vitamin D enriched. It is estimated that over 25,000

tonnes of vitamin D mushrooms were sold in the UK in the past year alone.

Monaghan Mushrooms are continuing to innovate by working with MBio to produce vitamin D enriched mushroom powder that can be used to counter dietary deficiency.



GOAL 2

Enhance Customer and Consumer Trust in our Food System, Providing Evidence of a Safe, Ethical Food Supply



The agri-food sector operates under a social license of acceptance and approval of the community. Citizens, trade customers and consumers have generally high levels of confidence in the safety and authenticity of Irish food and this must be maintained and further developed on an ongoing basis for legitimacy, credibility and trust. However, it must be acknowledged that this claim is increasingly being challenged. Therefore, there is a need for evidence-based data to underpin the assertions being made around food safety and authenticity. Trade customers and consumers are becoming more sophisticated and they expect and demand that the background food story is coherent with the values they hold. Ireland takes a “One Health and One Welfare” approach to building trust and mitigating risks across the food system and the production environment.

SAFE AND AUTHENTIC FOOD

ACTION 1

Implement the ‘Food Safety and Food Authenticity Strategy’ action plan.

ACTION 2

Revise the ‘National Farmed Animal Health Strategy’ when the current one expires in 2022.

These strategies should be developed and implemented in consultation with stakeholders, to ensure coherence and alignment with the ‘One Health One Welfare’ approach.

ACTION 3

Leverage the expertise and resources of all organisations involved in control of the food system to continue to enhance the reputation of Irish food and drink, including:

- Conduct risk assessments and enhance testing capability (using data analytics and digital technology), along the complete food chain, to quantify the threats caused by food-borne hazards to human health, and to identify, assess and implement appropriate measures of intervention and control.
- Enforce robust food safety and authenticity measures at all points along the food chain to maintain trust and to prevent damage to the system through a lack of confidence.
- Work collaboratively and deploy appropriate resources to continually strengthen the regulatory food control system.
- Build on existing collaborative structures between regulators and the agri-food industry to ensure a capacity and capability for adequate contingency responses in the event of serious incidents.

ACTION 4

Publish a new National Action Plan for Antimicrobial Resistance (iNAP), co-sponsored by the Department of Agriculture, Food and the Marine and the Department of Health, to replace the current plan which expires in 2020.

Develop, introduce and promote necessary systems that assist in the delivery of the iNAP objectives in areas such as improved animal health (e.g. Animal Health Ireland (AHI) promoted programmes), improved

herd biosecurity, measuring antibiotic usage, increased use of milk recording, rapid sensitivity testing, etc. In addition, continue to advance the science of AMR and seek alternatives to antibiotics, such as exploring the use of novel by-products from food production and processing. Further, continue the work of the Anti-Parasitic Resistance Group to address this issue.

ACTION 5

Implement the newly launched National Farmed Animal Biosecurity Strategy

which informs and guides actions on the prevention of disease and the maintenance and improvement of Ireland's herd and flock health status, while also having positive impacts on food safety.

ACTION 6

DAFM and other relevant agencies should ensure that vulnerability assessments are conducted on the food chain and that measures are taken as appropriate to maintain and safeguard the authenticity and integrity of food standards and marketing claims.

TRANSPARENCY AND TRUST

ACTION 7

Continuously review systems for transparency, traceability, food safety, food authenticity and animal welfare information along the food chain,

for example by harnessing emerging technologies that are verified and robust and integrating them into existing traceability and control systems in line with the regulatory framework.

ACTION 8

New technologies and platforms will be created and used to:

- Develop focused, factual and clear messages for trade customers and consumers, including the promotion of more direct contact with producers, around food safety, how food is produced, how it is processed, sustainable food and healthy diets.
- Connect and facilitate knowledge transfer among producers, and to consumers.
- Review all relevant datasets currently available within government and state agencies and in industry or in open data sets, to ensure evidence

can be provided to demonstrate safe, authentic food. Build data-hubs to support enhanced use and inter-operability of data across the food system.

ACTION 9

Implement the new National Animal Welfare Strategy (2021 – 2025).

The new national overarching strategy takes a One Health One Welfare approach, recognising the strong interconnections and interdependencies between human, animal and environmental health and wellbeing. It is underpinned by five guiding principles: working in partnership; science and evidence-led policy making; improving education and knowledge; consistent evaluation and assessment and an effective regulatory system. It provides the framework within which all animal welfare matters can be considered and advanced through the collective effort of stakeholders, such that the vision of Ireland being increasingly recognised as a country that actively promotes and safeguards the welfare of animals is achieved. This will reflect positively on our society and in the international marketplace on our livestock industries.

CASE STUDY:

ONE HEALTH IN ACTION

Eugene Sheehan runs a 300-sow farrow-to-finish pig unit in Co. Cork and has dramatically reduced his level of antibiotic usage as well as overall production costs in recent years with on farm biosecurity being an integral element in the successes achieved.

The Sheehans were one of the first pig farms in Ireland to use the Biocheck.UGent® biosecurity scoring tool, which was introduced by Teagasc as part of its Advisory Services package to enable farmers to review biosecurity and improve performance on their farms. Eugene's achievements were recognised at EU level and he won the EUPIG Ambassador for Health for Early adoption of biosecurity tools award. Eugene has implemented a series of management and biosecurity practices that have helped improve pig health, performance and sustainability of the family farm enabling: control of most of the endemic disease issues on farm; a reduction in the use of antibiotics by 90%; removal of zinc from pig diets at therapeutic levels; and a reduction in production costs by over 9%.

Eugene worked in partnership with his vet/farm advisors and nutritionists to identify animal health issues and areas for improvement on farm and invested in building additional pig housing which decreased stocking density and further improved biosecurity practices on farm allowing an "all-in-all-out" system avoiding mixing pigs of different age groups.

Although this change required an initial investment, it paid off very quickly in terms of the decrease in production costs per kg slaughter weight. Eugene reports that it took almost two years and a lot of hard work to see the benefits of all the changes but running the farm is now easier and more profitable.



Eugene Sheehan and his son Ciaran



GOAL 3

Increase Value add in Food & Drink Through Insight, Product Development and Differentiation



Trade customers and consumers increasingly want food that is convenient, fresh, nutrient rich, tastes good and is sustainably sourced. It is not enough to say this, evidence of these attributes must be provided. Differentiating products through innovation will also help to open new market opportunities in premium and online markets.

Research, development and innovation are key drivers of increasing value-add and developing new products. These aspects are considered in the Mission 'An Innovative and Competitive Agri-Food Sector, Driven by Technology and Talent' and should be closely considered in conjunction with the actions listed below.

ACTION 1

Develop the evidence to demonstrate the differentiating attributes of sustainably produced Irish food and beverages, particularly around taste, nutritional profile and health inducing properties, that are in line with lifestyle trends particularly in the area of convenience.

Prioritise food products derived from grass-fed systems in the first instance, while also exploring new opportunities that may arise in the horticulture

and organic sectors, particularly for substitution of imports.

ACTION 2

Develop value-added functional foods and ingredient solutions with proven health benefits.

The ability to monitor health and nutrition more closely is a growing consumer interest, especially for older adults and young children. This can be achieved by building on existing platforms such as Food for Health Ireland and the Alimentary Pharmabiotic Centre (APC). Note, this action is closely linked to Goal 2, A Strategic Funding Approach for Research, Development and Innovation, in Mission 4.

ACTION 3

The food and beverage industry should take advantage of digital innovations and artificial intelligence (AI) to:

- assist consumers live active healthy lives, and enable smart & personalised food choices, e.g. of the nutritional content/allergens in food;
- develop versatile and affordable sensors applied for the real-time, control of food processing, thereby minimising waste and enhancing food quality for customers and consumers;

- facilitate the development of food systems and decision-support tools to assess and improve Irish crop production including its nutrient profile;
- develop new sales and distribution channels such as online and home delivery;
- tell the story of how Irish food is produced, bringing trade customers and consumers closer to primary producers.

Note, this action is closely linked with Goal 4, Enhance the Use of Technology and Data, in Mission 4.

ACTION 4

Industry will use R&D and innovation to progress reformulation of energy-dense and nutrient-poor processed foods to reduce the levels of disadvantageous components (e.g. sugar, salt, nitrites and/or trans fats) – see also Goal 1.

ACTION 5

Further develop on Bord Bia's 'Thinking House' model of targeting product and market segments based on consumer and market insights, while leveraging regulatory expertise to ensure new products and innovations are compliant with relevant legislation.

The ability to utilise foresight into market and consumer behavior should also continue to be developed. Retailers and brand suppliers also have an insight into consumer trends, attitudes and behaviours, and with the growing amount of data collected in this area, there is an opportunity to leverage this through the supply chain. Efforts should also be made to improve the transmission of market insights to primary producers, as part of a move to greater transparency in the food chain.

ACTION 6

Industry will further leverage the various sectoral technology centres to further drive innovation, value-add, new product development and reformulation, lean manufacturing, automation, and circularity.

The establishment of the Prepared Consumer Food Centre, National Food Innovation Hub,

Meat Technology Ireland and the BIM's Seafood Development Hub, as well as other research centres such as Food for Health Ireland, the Dairy Processing Technology Centre and VistaMilk, have been hugely beneficial to the industry in carrying out collaborative research on key areas of common interest to companies in the sector. The opening of the new National Food Innovation Hub located at Teagasc Moorepark in 2021 will be another significant development.

ACTION 7

Consider the feasibility of extending innovation hub models to new sectors

(e.g. brewing and distilling). Learnings and synergies across the various research centres, and with other industries, should be explored.

ACTION 8

Support for early-stage food businesses

(Teagasc and other research institutions are developing innovation and pilot processing centres) should be networked and linked to each other and to initiatives (including Enterprise Ireland's High Potential Start Up programme), as well as larger scale national innovation centres.

CASE STUDY:

KERRY FOODS REFORMULATION OF DAIRYGOLD



Kerry Group is committed to enhancing the nutritional composition and credentials of its brands including the reduction of sugar, fat and salt across all products in line with category specific targets. The focus of this case study is the reformulation of the market leading spreads brand, Dairygold, to reduce sodium levels by 27%.

THE CHALLENGE

Kerry Group recognises the importance of reformulating for health as well as considering consumers' desire for convenient great tasting foods. The project involved a cross functional team, including product innovation, process development, nutrition science, consumer insight and marketing. The team's ambition was to improve the quality and taste of Dairygold, maintain shelf-life while reducing sodium content.

ACTION TAKEN

For Kerry Group, it was important to keep the reformulation recipe as simple as possible, while achieving the required sodium reduction through using new ingredients and process techniques. Sensory testing was then carried out with an external panel that found the newly reformulated product tested above the original recipe in taste and functionality across both loyal and non-loyal Dairygold consumers.

The Team involved also developed 100% recyclable packaging to support the launch of the new recipe in market, which was aligned to Kerry Group's "Beyond the Horizon" 2030 Sustainability vision and Kerry's ambition to reach over two billion people with sustainable nutrition solutions by 2030.

THE OUTCOME

The reformulation of Dairygold resulted in 27% less sodium content with no reduction in shelf-life and an improvement in functionality and taste. The new recipe launched in new 100% recyclable packaging and proved a huge success in the market. Over a four-month period, 39,000 new consumers purchased Dairygold and volume sales increased by 15%.



GOAL 4

Develop Market Opportunities at Home and Abroad



Irish agri-food has been successful in accessing and developing new market opportunities, both locally and in international markets. Diversifying and developing markets should continue to be a priority.

EXPORT MARKETS

ACTION 1

Prioritise markets and target segment(s) by continuing to conduct and use trade customer and consumer and market insights, both at company, sector and national level.

This should include building on the reputation of Irish food and drink to reinforce existing retail and food service customer relationships and attract new customers and routes to market.

ACTION 2

Defend and build market share in the UK, building on British trade customer and consumer confidence in Irish food and drink as quality, trusted, sustainably produced and 'close to home'.

The relatively high proportion of exports to the UK market can be attributed to a mix of economic, geographic and cultural reasons. Although the trading relationship has changed, Great Britain will remain a significant market for Irish food and drink.

ACTION 3

Increase efforts to gain and maintain market access for key product categories to priority international markets.

Maintaining and building on existing market access will require an intensified programme of inward and outward Government to Government meetings and technical discussions, as well as utilising the network of DAFM attachés located in Irish Embassies across the globe. New markets with different cuisines offer opportunities to add value (for example by finding markets for meat offals).

ACTION 4

Intensify the programme of Ministerial trade missions to priority international markets.

ACTION 5

Enhance the presence of DAFM and Bord Bia in those markets where a need is identified.

The placing of such resources should also be responsive to market developments. These efforts should be effectively coordinated with other Government Departments and agencies, particularly Enterprise Ireland, to maximise the benefits for Ireland's trade agenda and food and drink exports.

ACTION 6

Carry out an update on the 2018 'Prioritising Markets: Opportunities for Growth' exercise in 2022 in conjunction with industry stakeholders.

ACTION 7

Tailor new product development to the needs of trade customers and consumers, particularly those in high value markets and market segments, having regard for new consumer buying habits such as online shopping and home delivery.

Ensure investment in Research & Development and NPD is supported by innovation in branding and customer experiences to differentiate and premiumise products and increase targeted marketing campaigns in these markets.

ACTION 8

Further integrate primary producers into market engagement in order to keep them informed of market developments and product requirements in their main export markets and to help them plan their business for the medium term. Identify a select sub-set of credible 'champions' to help make the case directly to customers and consumers.

ACTION 9

The relevant Irish authorities will work to maintain and enhance a rules-based and equitable multilateral trading system, particularly in international fora such as the World Trade Organisation (WTO) and OIE.

In addition, imports into the European Union should meet the same high standards for food safety and authenticity, traceability and environmental standards as food produced in the EU.

DOMESTIC AND LOCAL MARKETS

ACTION 10

Explore domestic market opportunities, particularly for horticulture, organic, prepared consumer foods, tillage crops, pigmeat and poultry and support initiatives to encourage retailers, food service operators and the public sector to source Irish food and drinks, while at all times respecting the EU Single Market Principles and Regulations.

ACTION 11

Promote short, efficient routes to market that connect small food producers to the consumer and provide advisory, investment and marketing support for those who wish to diversify into new products.

Examine how other countries have been successful in developing premium markets from family-farm produce.

ACTION 12

Support opportunities for direct local sales e.g. through developing farmers' markets, community agri-food initiatives and online direct sales platforms.

Local community initiatives where food practices are shared, and which are often non-commercial, can be empowering and have also proven to be positive in terms of improving health and wellbeing.

ACTION 13

Support small and artisan food producers to develop, market and sell their products into the local and wider domestic markets.

ACTION 14

Continue to develop linkages between local food and tourism offerings, including support for business development and marketing initiatives to support and promote food and drink visitor attractions including the distillery, brewery and tourism sector.

For example, the seafood sector's approach to augment their value and connect with other economies in their area with the Taste of the Atlantic – a seafood journey. The Taste of the Atlantic a joint programme between BIM, Bord Bia and Fáilte Ireland runs along the entire Wild Atlantic Way route and offers a platform to showcase Ireland's exceptional seafood producers from the Inishowen Peninsula at the top of Donegal right down to Oysterhaven Bay in Cork.

MISSION 4

**An Innovative,
Competitive &
Resilient Agri-Food
Sector, Driven by
Technology and
Talent**



Ireland's agri-food sector is outward looking, dynamic and strongly export & consumer oriented. It has earned a strong reputation internationally as a trusted supplier of high quality, safe, sustainable food. Given the highly competitive global markets we sell into, the sector has to work hard to protect this reputation and continuously strive to innovate and maintain a level of competitiveness and resilience that enables it to prosper.

An effective innovation system, a strategic approach to R&D funding and an engaged and responsive knowledge exchange environment are fundamental. While Ireland's agri-food R&D capacity and knowledge exchange at farm level are considered strong in an international context, continuous improvements are needed, particularly to bring them into line with the latest thinking on effective innovation systems and to ensure maximum impact for publicly-funded research.

The decade between 2020 and 2030 is likely to see even greater advancements in the use of technology and data on farms, fishing boats, forests and across food and drink companies. Ireland has a vibrant ag-tech start-up community and their innovations and those of other entrepreneurs and technology companies hold the key to driving greater sustainability, innovation, efficiency and prosperity for the sector. Precision agriculture is evolving at a rapid rate and it is critical that Ireland's agri-food sector is positioned to take advantage of this.

Even with the best use of technology available, no business can survive if it is not fundamentally competitive and able to withstand market and other shocks that inevitably arise. While many of the factors influencing competitiveness and resilience are outside

of the control of the agri-food sector, there are policies and tools that can help businesses to position themselves stronger.

A further key fundamental cutting across all of these areas is having the optimum mix of diverse, skilled, and appropriately-trained talent. The sector has to compete with many others in attracting and retaining people from primary production level right up to consumer interfacing positions. In addition, the nature of many of the roles in the sector is likely to change quite substantially in the period to 2030, as will the career preferences of young people. It is vitally important that the sector is prepared for these new labour and human capital dynamics and that it values one of its most important assets – its people.

These are the primary areas addressed in this Mission of 'An Innovative, Competitive and Resilient Agri-Food Sector, Driven by Technology and Talent' and could be said to be the key enablers for the implementation and realisation of the other three Missions in this Strategy.



GOAL 1

Move to a Challenge-Focused Innovation System



Innovation policy should have a challenge-orientation, focused on addressing problem-specific societal challenges that require the interaction of many different sectors and actors (including regulators) to find solutions. In creating a supporting environment, a well-functioning innovation ecosystem should be:

- Focused on the key challenges, including health and sustainability.
- Engaged with key stakeholders to increase networking, collaboration and governance; Primary producers are a key element in this and can act as partners in developing and testing innovations and scaling-up viable opportunities.
- Focused not only on scientific and technological development of new products and processes but also on policy, organisational, behavioural, and regulatory change to support speedier uptake of knowledge & innovation; Attractive to increased private investment.
- Allow for rapid and equitable diffusion of science, technologies and non-technological innovation; Address the speed and uncertainty associated with scientific, technological and social change.
- End-to-end in scope; linking primary producers, intermediary processors, and brand owners to address real consumer needs to drive sustainable growth.

BOX 5: REPORT OF THE HIGH-LEVEL INNOVATION TEAM

The Food Wise 2025 strategy identified the need to review the current innovation capacity and its utilisation. As a result, a high-level innovation team (Paul Finnerty, former CEO ABP Food Group and Chair of the team, Frank Roche, Director Michael Smurfit Business School, and Mella Frewen, DG Food Drink Europe) was established. The report of the innovation team highlights that the public sector, across a multiplicity of organisations, provides substantial state support for the sector, greater than that invested by the private sector and that this is exceptional by international standards. It also found that the system is complex and needs to be reformed through increased coordination and improved direction and management. The report pointed out that whilst the level of knowledge creation is significant, the level of collaboration is inadequate (both within and between the public and private sectors); and that there is too little focus on the end user or consumer, and insufficient focus on measurable outputs. The team emphasised that innovation must go further than product and process innovation, and that a new approach is needed that is output-based and mission-orientated. Finally, they recommended a vision that Ireland should “*be a global leader of innovation for sustainable food and agriculture systems*” and

that this will be achieved by:

1. Developing an output-based and mission-orientated Agri-Food Innovation Strategy.
2. Appointing a single point of oversight with responsibility for driving the Agri-Food Innovation Strategy and ensuring a cohesive and collaborative approach; and
3. Driving greater collaboration across the Agri-Food Sector.

Based on their consultations with stakeholders in undertaking their review the Innovation Team also suggested the following grand challenges as priorities for a revised innovation system:

- a. Sustainable Food Systems.
- b. Nutrition (including a focus on pasture-based systems & nutrition) & Health.
- c. Advanced Manufacturing; and
- d. Digitalisation across the value chain.



ACTION 1

Implement the recommendations of the High-Level Innovation Team through the development of a roadmap (the Agri-Food Innovation Strategy) including:

- a. Develop a mission-oriented, output-focused approach with stakeholders to address key challenges, while acknowledging the requirement for research and knowledge creation on new and developing concepts and policy.
- b. Improve the cohesion of public and private actors in the agri-food innovation system through a framework approach and the identification of key performance indicators.
- c. Promote increased collaboration among all stakeholders (public, private and academic institutions) including to create, design, demonstrate, test and learn about new ideas in real world settings. European Innovation Partnerships and national collaborative research, technology and cluster programmes such as those initiated by Enterprise Ireland are good examples of such initiatives.
- d. Businesses should be supported to develop an innovation culture throughout their organisations that supports all types of innovation (near, medium and longer term) and pursuing innovation that is output-focused and built on trade customer and consumer insight

- e. Build on ongoing initiatives and develop further strategic international partnerships and collaboration and examine international initiatives to support the addressing of identified grand challenges.
- f. Appoint a single point of oversight with responsibility for driving this Agri-Food Innovation Strategy.

ACTION 2

Engage with EU and international partners to co-develop a coordinated set of innovation actions, collaboration and networking focusing on aiding an environment and climate-led transition to a climate neutral agri-food sector and circular bioeconomy. Collaboration with Northern Ireland partners on all-island research priorities will be important in this regard.

ACTION 3

Examine the development of ‘Targeted Innovation Activities’ for specific agri-food sectors within the challenge-orientation approach focused on problem-specific societal challenges.

GOAL 2

A Strategic Funding Approach for Research, Development and Innovation



Both the public and private sector are invested in research, development and innovation.

Public Sector investment in agri-food research, development and innovation was in excess of €157 million in 2018 and comes from a variety of sources including DAFM, the Higher Education Authority, Science Foundation Ireland and Enterprise Ireland. In addition, the sector receives additional support and funding (including finance and tax incentives) from a range of State Agencies and dedicated rural, climate and technology innovation funds and the European Maritime and Fisheries Fund (EMFF). There are also significant EU Innovation supports and, to date, Irish researchers have obtained €91m in agri-food research funding from the EU's Horizon 2020 research programme.

In the private sector, Enterprise Ireland (EI) data shows that the food & beverage processing sector spent €124 million on R&D in 2018, equivalent to 0.6% of turnover (0.9% for consumer foods, 0.7% for dairy and beverages, and 0.4% for primary meats) or 91% of the Public Sector spend on agri-food research, development and innovation. While some companies in the sector have world class R&D programmes, in 2018 almost two-thirds of food & beverage clients surveyed by EI spent less than €100,000 on R&D. In effect, R&D and innovation is uneven and the low margins prevalent across much of the sector can lead to a lack of available funds for project investment. This needs to be improved because EI research shows that Food & Beverage clients that availed of either in-company

or collaborative innovation supports saw significant sales growth, compared to those that did not participate.

Inter-institutional collaboration and partnerships with industry have been significantly strengthened in recent years and EI continues to develop its offer in this space. In addition to individual collaborative research projects, e.g., innovation partnerships, this has led to a greater number of internationally recognised research and technology centres and regional clusters along with the development of high calibre expertise. This increased focus on market solutions, and the collaborative infrastructure that has been developed, needs to be retained and enhanced.

CASE STUDY: ESTABLISHING AND MAINTAINING LONG-TERM COLLABORATIVE PARTNERSHIPS AND NETWORKS IN THE AGRI-FOOD SECTOR

There has been significant investment by DAFM, Teagasc, Bord Iascaigh Mhara, Science Foundation Ireland and Enterprise Ireland in the development of science led research centres, industry led technology centres, regional clusters, innovation for piloting and demonstration to support the Irish Agri-Food Industry in the implementation of its innovation agenda.



SFI Research Centres	EI Technology Centres	EI Knowledge Gateways, Research & Technology Clusters	EI, Teagasc, BIM Pilot & Demonstration Facilities
VistaMilk Agri-Digitalisation	DPTC – Dairy Processing Technology Centre	BioConnect – Monaghan Biotechnology / Bioeconomy	Irish Bioeconomy Pilot Biorefining Plant
APC Microbiome	FHI – Food for Health Ireland	Pairc Na Mara - Galway-Marine Innovation	Moorepark Technology Limited
BiOrbic Bioeconomy	MTI – Meat Technology Ireland	TSSG – Agri-Digitalisation	Ashtown Prepared Consumer Food Centre
MaREI Renewable Energy	IMR – CirculEire - Circular Economy	Shannon ABC CircBio – Biotechnology / Bioeconomy	Moorepark Food Hub
AMBER Sustainable Materials	CeADAR – Data Analytics, Artificial Intelligence	Bia Innovator Hub – Galway – Food Innovation	BIM Seafood Innovation Hub

For the Irish governments, this very significant investment in public-private partnerships, pilot and demonstration facilities, regional and technology clusters in science, technology and innovation (STI) help make agri-food and bioeconomy research and innovation policy more responsive to the changing nature of innovation and to social, industrial and global challenges. For businesses, partnering with public research offers open innovation opportunities to help solve problems, develop new markets and generate value through co-operation and co-production beyond their own internal innovation agendas. For governments, public-private partnerships

are an attractive tool to address both market and coordination failures in research and innovation activities and aid the leveraging of private investment in science, technology and innovation activities. Public-private partnerships will also be key instruments in not only addressing sectoral innovation for the dairy, seafood, PCF and meat industries in the future but also for addressing societal challenges such as water quality, sustainable development, green growth and food system transition for people’s health, our climate, planet and communities including farmers, foresters and fishers.

ACTION 1

Maintain publicly-funded research in agri-food at an appropriate funding level.

Publicly-funded research should have a strong output focus and adopt a challenge-based approach, with a view to co-developing practical solutions for farmers, fishers, forest owners and agri-food businesses that are easy to implement. It should also be aligned with EU policies, particularly strategies, partnerships and the Mission Boards (on adaptation to climate change including societal transformation, healthy oceans, seas coastal and inland waters, and soil health and food) under Horizon Europe.

ACTION 2

Target privately funded R&D to reach 1% of turnover on average by 2025.

A pathway to realise this should be developed which would include a focus on collaborative research, including between sub-sectors, as well as company specific R&D and innovation, customer sponsored research, public-private and private-private partnerships.

ACTION 3

Strengthen links between agri-food R&D and other national research priority areas

through research co-operation, platforms or networks such as data, digitalisation, AI & ICT; advanced and SMART manufacturing, biobased and novel materials; climate science & carbon mitigation; biodiversity; and circular economy (nutrient & water recycling, food loss and waste).

ACTION 4

Review R&D tax credits to address specific issues that relate to the agri-food sector,

such as definitions and guidelines that currently do not adequately reflect R&D in the sector and that could also help to improve uptake among SMEs in particular.

GOAL 3

Develop a Dynamic Knowledge Exchange Environment



Knowledge and extension services have a key role to play in explaining research outputs to primary producers and rural communities, and helping them to find practical applications. If research outputs are not adopted by the end-user, it is a waste of resources, whether public or private.

At an EU level, efforts are being made to develop a strong Agricultural Knowledge and Innovation System (AKIS) under the Common Agricultural Policy. Ireland is recognised within Europe as having one of the most advanced AKIS. This can be strengthened further by focusing on key challenges, improving the linkages between public and private research and extension; and the linkages between universities, institutes of technology and public sector agencies such as Teagasc and Bord Bia. A deficiency that is recognised in many countries is that the end user (e.g. farmer or company) mainly plays a passive role in the AKIS.

Knowledge and advice are key to enabling all actors in the food system to become sustainable. Just as farmers have access to cutting-edge research and advisory services on production, equally important will be advice and research innovations on enhanced ecosystem services and natural capital. This advice should, ideally, be objective, tailored, field/farm-specific and available at a local level to take account of local geographies, farming systems and environmental priorities. Peer-to-peer learning and the co-creation of solutions with primary producers have been shown to have significant potential for enhanced adoption of

sustainability practices (“buy-in”) and all stakeholders, particularly farmer representative organisations, should increase its profile and use. It will also be particularly important that advisors are trained in all aspects of societal and environmental sustainability on key areas such as climate mitigation practices, water quality improvement, maintaining and enhancing biodiversity, animal health and welfare and antimicrobial stewardship. In addition, up to date environmental resource management modules should be included in primary producer education and training.

In relation to seafood, the European Maritime and Fisheries Fund (EMFF) will focus on areas such as enhancement of the transfer and uptake of research, innovation and technology in the sustainable blue economy, the improvement of maritime skills, and other areas.

ACTION 1

Develop an Agricultural Knowledge & Innovation System in line with the CAP Strategic Plan.

This should include enhancing knowledge flows and strengthening links between research and practice; strengthening all farm advisory services and fostering their interconnection within the AKIS; enhancing cross-thematic and cross-border interactive innovation; and supporting the digital transition in agriculture. This will require developing the full range of digital skills that primary producers will need, including up-skilling and re-skilling.

ACTION 2

Embed knowledge exchange principles and include a knowledge exchange component in publicly funded research.

Where feasible, seek to involve individual farms and advisors and allow for research to be co-created, designed, tested, demonstrated and adopted by the target end-user.

ACTION 3

Strengthen primary producer advisory and extension services to cover environmental and climate performance, innovation and digitalisation, as well as agronomic, animal health and welfare, technical and financial aspects.

- a. Primary Producers & Advisors will require continuous professional development so as to aid the uptake and adoption of sustainable technologies and practices particularly on climate and biodiversity (e.g., hedgerow management) in a timely fashion
- b. Current AKIS providers should develop initiatives to engage with farmers who currently do not engage with the farm advisory system.

ACTION 4

Develop, test and share knowledge and experiences through for example focus groups, living labs, incubators, and other co-operative activities.

Prioritise more farmer engagement and peer to peer learning and advice should be tailored to the primary producers in their local area. Capitalise on the expertise and communication skills of farmers through more farmer-led talks, videos and other outreach activities.



GOAL 4

Enhance the Use of Technology and Data



Closely connected to the research, development, innovation and knowledge exchange areas is the role of technology, data, digitalisation and nature and biobased solutions. Improvements in the performance and cost of sensors, computing, storage, and band-width are all leading to significant advancements in many areas of food production, processing and distribution.

Technology Centres, such as the Dairy Processing Technology Centre and Meat Technology Ireland, support R&D projects which investigate how these technologies can be applied in a food processing setting. Investments in this area have also been supported by the presence of key agri-tech accelerators as well as State and European investment. Despite this, the innovation ecosystem is still at a relatively early stage and the uptake and application of technology to the sector has been slow and not had the impact on innovation, productivity and sustainability that is evident in other areas of the economy.

There are a wide range of digital innovations promising to substantially change the way we manage soil & land, produce, process and distribute food and its by-products and residues, and improve transparency along the food chain. Some of these have great potential but require regulatory approval. For example, Genomic Technologies could accelerate the process of reducing dependency on Plant Protection Products (PPPs). However, their use will be dependent on the outcome of a European Commission review due

to conclude shortly and any associated legislative amendments necessary.

Being able to make effective use of data and digital applications requires the participation and co-operation of many different stakeholders. For example, data needs to be shared with people and machines capable of analysing it, meaning that systems and protocols are needed to govern, share and exchange data while maintaining their integrity and safeguarding individuals' privacy or commercially sensitive information. Additionally, for a digital transition in the agri-food sector and rural areas to occur, primary producers will need access to impartial advisory services and data to help minimise a 'digital divide'.



CASE STUDY:

AGTECH HUB



Enterprise Ireland (EI) through its Regional Economic Development Fund has funded a number Agri-Tech related Centres. For example, the AgriTech Centre of Excellence (ACE) is a collaboration between IT Tralee, DairyMaster, McHale, Abbey Machinery and Kerry County Council.

Additionally, NovaUCD has been awarded €3m in funding to help turn UCD Lyons Farm into the central hub for ag-tech research in Ireland and to develop an AgTech Connector Innovation Hub at the County Kildare farm. The hub aims to bring together Ireland's wider AgTech community and help with the launching and scaling of AgTech companies by providing access to on-farm research collaboration opportunities, as well as a location to test and trial products and services in a real-world environment. The hub will also provide access to dedicated acceleration programmes and incubation facilities. The AgTech Hub led by NovaUCD, will be developed in collaboration with AIB, Kildare County Council and Kildare LEO and several agri-companies and investors including, Devenish, Dairymaster, and Glanbia, and Finistere, The Yield Lab, and Atlantic Bridge.

ACTION 1

Develop the digital transition of the agri-food sector in line with policies such as the CAP Strategic Plan process and the National Digital Strategy. Key principles which should be followed include:

- a. Develop a coordinated approach for the use of data and digital technologies in agri-food, focusing on the specific needs and requirements of primary producers, processors and consumers
- b. Examine the opportunity for the use of public data sources to support the design and implementation of agri-food and bioeconomy policies addressing productivity, sustainability and transparency
- c. Promote 'fit for purpose' technology that is backed up by a robust business case around the adoption of such technology at farm level. In addition, develop ways of communicating with society, trade customers and consumers how these technologies are used in food production so that they are understood and not feared, such as through Origin Green
- d. Foster greater collaboration between research organisations and non-traditional partners.

ACTION 2

Develop the digital transition in fisheries

in line with the EMFF and the national digital strategy and the EU Mission Starfish 2030 including to align with activities to fully map, sequence, observe and predict our ocean, seas and rivers to allow the development of trusted and fit for purpose science-based deliverables (observation system, modelling capacity, maps) that can be used as services to underpin a sustainable blue bioeconomy.

ACTION 3

Increase co-investment between the public and private sector for ag/food-tech and bio-economy accelerator programmes.

In addition, foster an investment culture that supports the scaling of early stage ag/food-tech & bioeconomy companies.

ACTION 4

Undertake research and increase engagement with initiatives to address the socio-economic impact of agri-digitalisation with a particular focus on data governance issues.

This should build on the findings from an ongoing Irish research project, 'Agri-Discrete', that aims to contribute to good data governance practices in agriculture and forestry and which is also considering the EU code of conduct on agricultural data sharing by contractual agreement (developed by Copa-Cogeca).

ACTION 5

Labour-saving automation research and development, including a focus on advanced manufacturing, should be pursued by all available means, public and private, particularly for lower-skilled and repetitive manual roles.

SMEs may require assistance in this. Re-training should be offered where necessary for those whose jobs may change or be displaced.

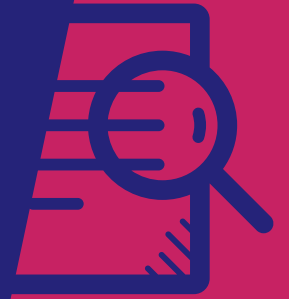
ACTION 6

Rapid roll-out of the National Broadband plan

(including broadband connection points and digital hubs) will be critical to realising many of the actions in this Strategy. All relevant stakeholders should work in a spirit of collaboration to deliver this plan as its importance has only grown since the Covid-19 pandemic. Along with being a critical part of the National Digital Strategy, high speed broadband can also facilitate the increase in remote working seen during the pandemic and it will also have an important role to play in helping agri-food businesses to develop their presence online.

CASE STUDY:

THE USE OF FIELD-BASED TECHNOLOGY IN THE HEN HARRIER PROGRAMME



The Hen Harrier Project has nearly 1,600 participants who manage 37,610 hectares of land in the Special Protection Area (SPA) network with some of Ireland's most sensitive habitats.

The summer of 2019 was the first season where the new Hen Harrier Programme App was operational. This facilitated the collection of data on almost 19,000 fields and this continued into the 2020 season.

Building on the lessons learned in the early years of the project the Hen Harrier Program developed an App for advisors to input data from field assessments into their database.

The data included quantitative (the extent of the participants involvement, i.e. BPS declarations), and qualitative (field/monitoring data that determines payments).

The system is continually enhanced. The Hen Harrier Project introduced the geo tagging of field assessments in 2020. This verifies that the Advisor is in or close to the field at the moment they save the assessment. It also creates a digital trail from the moment of assessment (by a trained advisor using a standard technique) to the point of payment.

Further developments include a partially automated screening system to enhance the capacity of the team to assess proposed supporting actions - this is an essential step forward if the operation of large-scale schemes is to be feasible in the future. In addition, a nest protection management system was also developed to collate records of nest protection works and to provide for improved planning and resource allocation to this task in the future.

This type of field-based technology will enable more results-based schemes to be part of the next CAP.



GOAL 5

Improve Competitiveness and Resilience



{Note: only the secondary / processing sector is addressed here as competitiveness and productivity in the primary sector are addressed in Mission 2}

Maintaining and improving competitiveness and resilience is a key concern for all businesses and productivity growth is a critical factor. Differences exist, particularly between SMEs and large companies including multinationals, which overall have much higher growth rates for labour productivity, for example.

The agri-food sector is unique in its enterprise mix, including both foreign and Irish-owned multi-national firms, as well as mid-cap companies and a large number of SMEs.

Investment in research, development and innovation is essential to enable agri-food processors to build resilience, compete in global markets, and increase value-add. In addition to research, development and innovation, factors driving productivity, competitiveness and resilience include labour and human capital, sales & exports, access to finance & investment and the overall business environment for cost competitiveness. The latter two are considered in this Goal.

The agri-food sector is one of the most capital intensive of all sectors in the Irish economy so access to finance is a critical requirement to maintain competitiveness, enabling businesses to innovate and grow. It is a challenge in particular for SMEs. It is

important that there is continual review of finance options to ensure that both day-to-day cash flow and longer-term investment needs are being addressed, as well as access to State Aid through Enterprise Ireland and others for investments in innovation, market diversification, up-skilling and capital equipment.

CASE STUDY: FUTURE GROWTH LOAN SCHEME

The Future Growth Loan Scheme (FGLS) was developed by the Department of Agriculture, Food & the Marine and the Department of Enterprise, Trade & Employment, in partnership with the Department of Finance, the Strategic Banking Corporation of Ireland (SBCI) and the European Investment Fund (EIF). It supports strategic long-term capital investment by SMEs including farmers, fishers and food businesses.



It is being delivered through participating finance providers with a fund of €800 million of investment loans available to eligible Irish businesses. The loans are competitively priced with an initial maximum interest rate of 4.5% for loans less than €250,000, are for terms of 7-10 years and support strategic long-term investment.

This is a financial product that was previously unavailable in Ireland, hence the involvement of the various public bodies to bring it to market. The unique characteristic of the Scheme is that loans up to €500,000 are unsecured, making it a viable source of finance for young and new entrant farmers, especially the cohort who do not have high levels of security. It also serves smaller-scale farmers, who often do not have the leverage to negotiate for more favourable terms with their banking institution. Food companies have also identified long-term investment finance of up to ten years as a critical need which is currently unavailable in Ireland.

Open for applications since April 2019, the scheme has seen very strong demand for investment loans, particularly from the agri-food sector. The Scheme is an important Government support to small and medium businesses, a sector in Ireland which under-

invests by EU standards. By supporting farmers, fishers and food businesses to make investment decisions tailored to their enterprise, it promotes competitiveness and resilience and in the agri-food sector all along the food production chain from primary producer to processor.

€500 MILLION GOVERNMENT FUNDING FOR FUTURE GROWTH LOAN SCHEME

Loans between €25,000 - €3 million for SMEs, farmers, fishing businesses

Long-term competitive rates for terms between 7 and 10 years

Given the reliance on the UK and international markets for agri-food sales, currency volatility and particularly any appreciation in the value of the euro, poses competitiveness challenges. Ireland's Competitiveness Scorecard 2020 also identifies other longstanding cost competitiveness issues for the economy as a whole including insurance, legal costs, housing and childcare.

In summary, although Ireland is generally a high-cost economy, low tax policies for business, a productive workforce and a focus on adding value allow Irish agri-food companies to compete internationally. Given that it is unlikely Ireland will ever become a low-cost manufacturing economy, the focus must remain on continuous improvement and operational efficiencies, alongside increased investment in research, development and innovation.

ACTION 1

Promote the take-up of appropriate supports for companies, particularly SMEs, of Enterprise Ireland supports, aimed at developing company competitiveness, capability and resilience

(e.g. the Capital Investment Initiative and Operational Excellence supports including the 'LEAN Offer' and 'Green Offer' and the Market Discovery Fund) and Science Foundation Ireland competitiveness tools (e.g. Spokes Partnerships) to build capability. In addition, utilise the services of Bord Bia in trade customer and consumer-led insights through for example the Brand Development Service which can improve value-add and enhance business resilience and competitiveness.

ACTION 2

Review current levels of state aid to support increased levels of indigenous and foreign direct investment in enabling technology, including ensuring the needs of food & drink companies are fully reflected in Ireland's inputs to the upcoming review of State aid rules scheduled for 2022

with a particular focus on ensuring state aid continues to be available for investment in innovation, enabling technologies such as biorefining, advanced manufacturing and digitalisation, plant renewal and expansion, refinancing, and market development.

ACTION 3

Continuously review access to finance, particularly for SMEs, including farmers and fishers,

to ensure businesses can innovate and grow, intervening with additional state supports such as those provided by the SBCI and others, as appropriate, as well as exploring finance opportunities offered by specialist funds.

ACTION 4

Actively engage with the National Competitiveness and Productivity Council (NCPC) and other relevant stakeholders on competitiveness and ease of doing business issues, especially on issues specific to the agri-food sector.

Consider an action plan to drive implementation of the NCPC recommendations most relevant to the sector.

ACTION 5

Facilitate closer economic interactions between SMEs and MNEs through trade linkages, demand-led research collaboration and open innovation approaches (e.g. EI/IDA Technology Centres, Regional & Technology Clusters and SFI Research Centres), and labour mobility.

GOAL 6

Attract and Nurture Diverse and Inclusive Talent



Employers across the agri-food sector depend on a mixture of skills, including professional, technical, scientific and general operatives relevant to the nature of the work. Meeting the demand for the appropriate level and mix of skills, talent and labour in the sector is a growing issue and poses a risk to its overall competitiveness and innovation.

At the primary level, a number of challenges exist, including attractiveness and generational renewal, availability of labour and education and training.

At the secondary or processing level, similar challenges exist. For example, employers in parts of the food industry are faced with significant issues in sourcing appropriate operational labour, particularly in food processing and manufacturing. There are also challenges in attracting new and diverse talent and skill-sets, particularly for roles where there is competition from other sectors of the economy, such as R&D, technology/ICT and branding/marketing. There are also issues in relation to providing attractive career progression pathways.

Overall, the agri-food sector needs to constantly innovate and re-brand to win in the war for talent. It must also make greater efforts at people development, the employee experience, ensuring a diverse and inclusive workforce and up-skilling and lifelong learning in order to retain its most important assets – its people.

It should be noted there is strong overlap between

Goal 4 in Mission 2, improving the social sustainability of primary producers, and this present Goal. In particular, generational renewal in primary production is addressed in that Goal. Therefore, they should be considered in tandem.

ACTION 1

Employers in the agri-food industry will develop an education, skills and talent attraction and retention strategy.

This should balance short-term needs with a vision of how new skills and talent from apprenticeship level through to Post-Doctoral level can contribute to strengthening the long-term resilience and development of the sector.

- a. Supports such as those offered by the Further Education Sector and organisations such as Enterprise Ireland, Teagasc, Solas, and SkillNet, and initiatives such as Alumni Networks and Diversity and Inclusion Master classes should be highlighted, continued and promoted.
- b. Build upon Bord Bia's Talent Academy master's degree programmes to address food industry skills requirements in export business development, category management, sustainability and insight
- c. One of the key drivers of talent development is strong leadership and leadership teams. Senior managers in agri-food businesses should prioritise their participation in Enterprise Ireland's suite of leadership development programmes, including the Leadership 4 Growth and Innovation 4 Growth programmes.

- d. The food and drink sector should continue to pursue the implementation of the recommendations contained in the Expert Group on Future Skills Needs in the Food and Drink sector. Priority should be given to ensuring the skills base reflects not just the current business demands but also the challenges of future growth in existing and new markets
- e. The promotion of agri-food education and careers needs to be improved in order to catch up with other sectors of the economy competing for prospective students or graduates. For example, the private sector could collaborate with the public sector in the financing and operation of an agri-food careers portal which would inform, promote and attract people, including non-traditional agri-food groups.
- f. Map how roles in the sector will change over the next 10-20 years.

ACTION 2

To ensure decent work and address labour shortages:

- a. Employers across the agri-food sector will make roles, particularly those that are operational in nature, more attractive, including ensuring that pay and conditions are comparable with similar roles in other sectors, that appropriate working conditions are in place, and the provision of training and development opportunities, including language skills.

- b. More responsive and flexible labour and immigration policies will be pursued. Where recourse to employment permits is needed, and recognising that this should be the last resort for filling vacancies, stakeholders should work together to prove that this option is necessary. In addition, efforts should continue by the Department of Enterprise, Trade and Employment in introducing a seasonal employment permit facility in new employment permit legislation. Greater efforts should also be made by employers to ensure that these workers are fully integrated into the workforce and offered attractive career progression opportunities.
- c. The People in Dairy Action Plan will be implemented in order to address specific labour issues in the dairy sector.

ACTION 3

Education and training programmes (note, education and training of primary producers is also addressed in Goal 4, Mission 2), including new apprenticeships, will be kept under review to ensure they respond to needs such as in the areas of environmental sustainability

(e.g. the inclusion of organic farming as an option in relevant Teagasc courses), social sustainability, new technologies, management and accounting, animal

welfare, animal health and food safety, LEAN principles etc. In the seafood sector, relevant stakeholders working with the skills and training offering provided by BIM should promote and fund the development of professional training, new professional skills and lifelong learning. In addition, to help in attracting new entrants and upskilling the current workforce, provide new learning options including accredited programmes with global recognition, on-line learning and bespoke on-site training. Virtual classes, e-learning, blended training (virtual and on-site) and digital innovation hubs will become even more important in a post-Covid world.

ACTION 4

Promote and improve gender balance at all levels, but particularly at senior management and board level

(note, gender balance at primary production level is addressed in Goal 4, Mission 2). Greater gender equality in businesses opens untapped talent sources, makes companies more innovative and responsive and, ultimately, more sustainable..

- a. Promote women in leadership roles in the agri-food sector, including improving gender balance in stakeholder organisations and State and company boards in the sector.
- b. Promote and support women's networks, such as CERES, and mentoring programmes for rural female entrepreneurs such as ACORNS.
- c. Promote and support women's return to work programmes, such as that developed by UCC and

Taste4Success Skillnet 'Rejuvenate'. These are important for increasing female participation in the agri-food labour force.

ACTION 5

Promote and develop initiatives to improve diversity and inclusion

Diversity of people, talent, backgrounds and skills will be critical to the future development of the sector and all stakeholders will participate in this. Appropriate and proactive management of cultural diversity can help businesses to address challenges in the areas of labour attraction and retention, language skills and building culturally competent businesses

- a. Employers should engage proactively with The Agri-Food Diversity & Inclusion Forum, a collaborative initiative between industry, Bord Bia and Aon and in partnership with The 30% Club, is a useful resource in this regard, particularly the online Diversity and Inclusion Toolkit designed for the industry.
- b. Employers should utilise the recommendations of the recently published Skillnet Ireland report 'Cultural diversity challenges and opportunities in the Irish agri-food sector'. These are particularly useful in improving diversity in culture and backgrounds, which can also be an advantage in increasing innovation and exploiting new business opportunities.
- c. Ensure that workplaces are inclusive of LGBTI+ people and work to ensure they are made positively visible, valued and welcome.

GOAL 7

Policy Coherence and Synergies in Sustainable Food Systems between Ireland's Domestic Policy and its Development Cooperation and Foreign Policy



This Strategy has proposed policies through which Ireland aims to become an international leader in sustainable food systems (SFSs). The Irish experience of agricultural and rural transformation is of relevance to countries at different stages in their transformation process, particularly to those developing countries, mainly in Africa, with whom Ireland has had a long-standing partnership through its development cooperation programme.

Ireland's readiness to promote SFSs within its development cooperation programme and climate diplomacy; and its capacity to influence EU policy on SFSs combine to enable Ireland to make an important contribution to the Food Systems Summit (FSS), convened by the UN Secretary General, in September 2021 and for other future initiatives likely to arise beyond this milestone event. The proposed Actions reflect the opportunity for Ireland to promote SFSs through its national development cooperation and foreign policy, climate diplomacy and through its influence on EU and international policy.

ACTION 1

Promoting food and nutrition security, and SFSs, will be a central part of delivering on Ireland's ambition of the achieving the UN aid target of 0.7% of GNI by 2030,

recently re-affirmed in the 2020 Programme for Government (PfG). An early priority should be that Government should take decisions on the

recommendations in the report of Ireland's NTTRA, including on those regions/countries and sectors which will be central to developing an integrated approach involving the governmental, private sector, civil society and the university sector. This should be the platform for supporting Ireland's efforts towards sustainable development in Africa as well as enhancing its developmental and wider economic interests.

ACTION 2

Continue to promote and enhance the Africa Agri-Food Programme to ensure it meets its objective of developing partnerships between the Irish agri-food sector and African countries.

ACTION 3

DAFM will align policy development and implementation with Ireland's commitments under the SDGs taking account of specified goal targets and indicators.

ACTION 4

Ireland will advocate that SFSs are an important part of the deepening strategic relationship between Africa and the EU

and should commit to an active role in working with other EU member states and with African countries

to deliver on this over the coming decade. One aspect which can contribute to strengthening the relationship is in the area of research and innovation for sustainable food systems, food security, and inclusive, sustainable agri-food production and value chains.

ACTION 5

Ireland will play a leadership role at the FSS in September 2021.

Ireland's record of the transformation of its own agri-food and rural sector, as well as its practice of developing strategy on an inclusive, multi-stakeholder basis, is of interest to a wide range of countries. The FSS will seek to encourage and support countries which use a food systems approach for their future national planning. By virtue of its own experience, Ireland should be in a position to provide leadership in this area, as well as making a specific policy input to one of the FSS's five objectives – Action Track 1: 'Ensure access to safe and nutritious food for all'.

ACTION 6

Work to secure the establishment of a network of international experts to develop a composite indicator or index of sustainable food systems.

Organisations such as the FAO and OECD should be the first point of contact. The index should help in providing an independent, reliable and trust-worthy measurement of sustainable food systems, empowering countries and citizens to become more informed in what can improve the sustainability of their food systems.

MONITORING AND IMPLEMENTATION FRAMEWORK





I. WORKING IN PARTNERSHIP

The unique aspect of this strategy and those that preceded it is that it has been developed by a broad range of stakeholders from across the agri-food sector. This form of 'participative' deliberation and involvement in preparing the strategy means that the sector itself is its owner and has a strong interest in successful implementation.

Crucial to this will be all actors in the sector working together in a constructive fashion, in a spirit of collaboration and partnership and, if necessary, compromise, to address the challenges and grasp the opportunities in the decade ahead. How food is produced, processed, transported, packaged, retailed, consumed and disposed of all add up to its overall environmental, social and economic sustainability. There is an opportunity for all players to collaborate along the supply chain for maximum impact. There is also a real opportunity to share and build on each others' insights and to work together to a common innovation and sustainability agenda. The challenges outlined in each of the Missions are such that they can only be tackled by the combined efforts of many, rather than the individual efforts of a few. Equally, the opportunities that are likely to present over the coming decade are there for all.

FAO has stated in the context of the Food Systems Summit, "the many independent initiatives of governments, private sector and civil society that have emerged in support of more sustainable food systems lack a common framing of the complex interactions, dependencies and trade-offs intrinsic to food systems". Ireland, through its agri-food strategy, has such a common framing process. This framework will support the transformation to "more efficient, inclusive, resilient and sustainable agri-food systems".

While the roles for private and public sector groups in implementing the actions are set out in the implementation plan, there are a number of areas which are of particular importance in enabling this approach of working in partnership:

RETAILERS, FOOD SERVICE AND CONSUMERS

The customers of Ireland's food and drink (retailers, the food service sector and consumers) should also play their part in helping the agri-food sector become more sustainable economically, environmentally and socially. With ever more demanding conditions and expectations, these can bring additional costs to the production and processing of food and drink. Margins are typically low and it is not always possible for actors in the food supply chain to absorb these additional costs. It is also undesirable to have a food system which expects more from producers and at the same time, constantly strive to reduce prices. Better communication and cooperation along the supply chain could help to educate consumers about where their food comes from and the work that goes in to ensure that it is safe, nutritious, ethically produced and sustainable, and meets their rising expectations.

ACTION 1

Retailers and the food service sector will engage with processors to agree initiatives and incentives for their primary producer suppliers that would encourage and reward greater adoption of sustainability practices.

ACTION 2

Retailers and the food service sector will work in a coordinated manner to reduce packaging and other wasteful practices.

ACTION 3

The agri-food sector should proactively inform the consumer agenda as well as responding to it.

All stakeholders should participate wherever possible, but particularly retailers and food service providers who are the direct interface with many consumers.

'BOTTOM-UP' AND PUBLIC/PRIVATE APPROACHES, INCLUDING FINANCING

While many of the actions in this Strategy are assigned to public or private sector groups, these will need to be complemented with bottom-up and community-led actions. In addition, funding will need to come from a variety of sources, including both private and public. This will be particularly important in accelerating the path towards greater environmental sustainability. We have seen examples of public-private partnerships such as Dairy Sustainability Ireland which led to the 'Agricultural Sustainability Support and Advice Programme' (ASSAP) and the IFA/EPA 'Smart Farming'. Meanwhile, the locally led innovation programmes (EIPs) have provided local solutions to specific issues. Fully-sponsored private sector initiatives are also emerging, such as bonus payments to farmers who comply with specific environmental criteria. Building on the provisions in Ag Climatise, the following actions should be considered in further building on this:

ACTION 4

Models such as the ASSAP, EIPs and fully sponsored private sector initiatives need to be replicated and scaled-up in the period to 2030 across a range of environmental areas.

Stakeholders such as industry representative bodies and private companies and co-operatives should come forward with such proposals. Initiatives should ensure that there is a credible estimate of the baseline ('before') such that the benefits ('after') can be clear, evidence-based and stand up to independent scrutiny. More private sector investment will require measurable outcomes and proof points – results-based payment schemes generate evidence based data on environmental performance and would work particularly well here.

ACTION 5

Multiple sources of finance and funding (including climate finance) will be required, both from the public and private sector.

While the CAP, the CFP and other EU and national sources of funding will be key in bringing about a climate smart, environmentally sustainable agri-food sector, in accordance with Action point 10 of the Climate Action Plan, the NTMA through New

Era and the Ireland Strategic Investment Fund (ISIF) should work with Government Departments and the private sector to develop suitable funding models to contribute to environmental programmes. This is in addition to current financing arrangements, including the successful partnership with the Strategic Banking Corporation of Ireland. In particular, ISIF has indicated that it can assist in working towards a functioning carbon market, and in providing long-term and flexible finance for the delivery of climate change and agri-tech measures proposed in the Strategy.

ACTION 6

DAFM should lead a multi-stakeholder project, facilitated by 'EIT Climate KIC' on a "Deep Demonstration" activity, to develop a coordinated set of innovation actions focusing on aiding an environment and climate-led transition to a climate neutral agri-food sector.

CASE STUDY:

OPEN SOURCE FUTURE FARM PROGRAMME



The Open Source Future Farm Programme is a key knowledge transfer sustainability initiative from Glanbia Ireland in conjunction with Teagasc. The participating Open Source Future Farms act as living environments to test new and emerging sustainability technologies and management practices with a view to ensuring that the lessons from such practice are made available to Glanbia Ireland's wider milk supply base.

A key objective of this programme is to harness advancements in technology, research and farm practices to help farmers implement changes to improve their environmental footprint, while also improving the economic sustainability of their farm businesses. The programme is also part of the EU-funded Smart Agri Hubs dairy project, with meters

installed on farms to monitor and improve water and energy usage.

A key priority of the programme is to introduce digital technologies and practices particularly in the area of labour efficiency. This will provide strong insights for other farmers on streamlining their farming operation to deliver lean management practices, whilst also supporting the health and well-being of the farmer.

Strong emphasis is placed on soil health, nutrient management planning, utilising high yields of quality grass, effective nitrogen usage and the Economic Breeding Index (EBI) of the herds, to help boost productivity while reducing climate impact.

Glanbia Ireland milk suppliers from counties Laois, Waterford, Kildare, Cork, Kilkenny, Meath, Wexford, Wicklow and Tipperary including Kevin Murphy and Shane Fitzgerald participate in the Programme and share their learning's with neighbouring milk suppliers, to support them to improve the sustainability of their farm businesses.



DIALOGUE & PARTNERSHIP

Effective dialogue and partnerships will go some way to fostering a more understanding discourse and managing the inevitable trade-offs between economic, social and environmental performance. Dialogue is also a key element of a Sustainable Food System. Discussions need to be respectful, grounded in fact, seen from different perspectives, and action oriented. Primary producers also need to work to improve transparency and trust with trade customers, consumers and broader society. Such an approach could include action in the following areas:

ACTION 7

All stakeholders should work together to identify leaders or ambassadors to educate, encourage and advocate for greater environmental and social sustainability.

Farmers and fishers are not just quality food producers but also are in the right place to respond to environmental challenges. Farmers and fishers need to take the lead here and be more proactive. Consideration should be given to acknowledging pioneers or leaders in these areas through a system of awards (e.g. www.farmingfornature.ie) and other activities such as festivals, local markets and local farm walks should also be rolled out.

ACTION 8

The agri-food sector needs to engage with children and students.

A working group should be established to consider how best this might be done and may include the sector convening a “Youth Summit”.

ACTION 9

Build on the experience of the national dialogues, held in 2021 as part of Irelands preparations for the UN Food Systems Summit, by continuing the culture of dialogue and stakeholder engagement, which is an important component of a food systems approach.

CASE STUDY:

FARMING FOR NATURE AWARDS



The Farming for Nature (FFN) project aims to celebrate and support farmers across Ireland who are going that extra mile to support nature on their farms, and to share their stories and knowledge with other farmers and the wider public. This will help to re-frame the prevailing negative narrative around farming and nature, to a more positive, inclusive and impactful one.

While acknowledging the negative environmental impacts of the wrong type of farming, FFN focuses on the huge potential resource that Irish farmers represent in addressing our climate and biodiversity crises. To mobilise this resource, farmers will need targeted financial and technical support, but they will also need to embrace this broader role of 'ecosystem service providers', producing great food as well as a range of environmental services for society.

As part of FFN's work, every year a number of exemplar Irish farmers are identified and the stories of these 'Ambassadors' and their practical knowledge are shared using short films, podcasts and media pieces. These 'peer testimonies' help inspire and inform other

Irish farmers on why, and how, they too might take the small or big steps needed to enhance the natural health of their farms.

The website www.farmingfornature.ie contains a range of resources designed specifically for farmers who are interested in improving biodiversity, building healthier soils or improving water quality on their land. These include an online forum, a suite of farmer-friendly resources including best practice guides, videos and podcasts. FFN hosts 'Ask the Farmer' Q&A sessions and Farm Walks throughout the year, led by farmers for farmers, and has an active social media presence.

An independent, non-profit initiative, Farming for Nature is supported by An Bord Bia, the Department of Agriculture, Food and the Marine and the National Parks and Wildlife Service. In the words of President Higgins, FFN is "a powerful and tangible exemplar of what can be done from the 'bottom-up', tackling the issue at grassroots level and fostering widespread awareness and buy-in, creating an environmental consciousness that can deliver powerful, far-reaching and lasting results".



II. KEY INDICATORS AND PROGRESS BY 2030

A key element of successful implementation is the assignment of responsibility for the actions contained in the Strategy, the key deliverables for those actions and the timeframe for their implementation. In addition, key high-level indicators are a further important element in framing the overall implementation of the Strategy. A detailed Implementation plan with the actions and their owners, deliverables and timeline for implementation will be published separately.

While the Strategy provides the vision and missions to facilitate a transformation to a sustainable food system, it should not be seen as a final or definitive roadmap. It is a framework within which more detailed plans and processes will need to be developed. National and international policy developments will also be important and the Strategy should be seen in that context, as the beginning of the pathway to the vision of a more sustainable food system.

As yet there is no internationally agreed set of indicators for Sustainable Food Systems, although these may emerge in the future. The Committee has

therefore identified the goals associated with each Mission, as well as the key indicators which will be used to track progress. The Committee has also outlined what progress by 2030 will look like.

MISSION 1

A CLIMATE SMART, ENVIRONMENTALLY SUSTAINABLE AGRI-FOOD SECTOR

Goal: A Climate-neutral food system by 2050, with verifiable progress achieved by 2030, encompassing emissions reductions, carbon sequestration, air, biodiversity and water quality.

Key indicators:

- Biogenic methane level
- Ammonia and Nitrous Oxide emissions
- Water quality
- Biodiversity – land and sea
- Afforestation level
- Level of organic farming
- Food Waste statistics
- Enhanced Origin Green Programme

PROGRESS BY 2030

The Committee acknowledges that in general, future environmental targets are likely to be set by legislation and commits to participating in the various target-setting processes with a view to the ultimate commitment to be climate neutral by 2050.

Biogenic methane: The Strategy commits to a reduction of at least 10% by 2030 (on 2018 level), recognising that this will need to adjust in line with emerging national and international targets for the sector and in line with the development of scientific solutions.

The target for biogenic methane will be updated when specific sectoral targets are agreed under the framework of the Climate Action and Low Carbon Development (Amendment) Bill 2021.

Nitrous Oxide: Emissions associated with chemical fertiliser use to reduce by more than 50% by 2030.

Water Quality: The Strategy commits to reduce nutrient losses from agriculture to water by 50% by 2030.

Biodiversity: It is envisaged that by 2030, 10% of farmed area will be prioritised for biodiversity, spread across all farms throughout the country.

Air Quality: Ammonia emissions to reduce to 5% below 2005 levels by 2030.

Forestry: Increase afforestation from existing levels to at least 8,000 ha per year and double the sustainable production of biomass from forests to 2 million tonnes by 2035.

Organic farming: At least 7.5% of utilisable agricultural area is targeted to be farmed organically by 2030.

Seafood: Achieve 30% of marine protected areas by 2030.

Food Waste: The Strategy aims to halve the level of food waste per person by 2030.

Origin Green Programme: Achieve a high participation rate by both primary producers and the food industry in an enhanced Origin Green programme.

Note: Ag Climatise has already set additional targets relating to chemical nitrogen use, abatement through LULUCF, the management of peat soils, genotyping, milk recording, slurry application, slurry stores, protected fertilisers and renewable energy.



MISSION 2

VIABLE AND RESILIENT PRIMARY PRODUCERS WITH ENHANCED WELLBEING

Goal: Competitive, productive primary producers with improved economic and social sustainability.

Key indicators:

- Family Farm Income (Family Farm Income per hectare)
- Economic Sustainability of farm business
- Economic return to land (Gross output per hectare) and Profitability (Market-based gross margin per hectare)
- Economic performance of the Seafood sector (as reported by BIM 'The Business of Seafood')
- Total primary output and output by sector
- Formal agricultural education
- Age Profile
- Number of new entrants
- Number of farm families
- Isolation risk
- Health and Safety statistics
- Market transparency

PROGRESS BY 2030

The Strategy is ambitious for primary producers, envisaging an upward trend in Family Farm Income towards 2030, with an increased share of viable and sustainable farms, reflecting improved economic returns to land and profitability per hectare, with increased diversification across sectors. The Strategy also foresees the seafood sector continuing on a path of sustainable economic and environmental development by carefully managing the utilisation of sea-fisheries and aquaculture.

The Strategy aims to improve the social sustainability of primary producers, increasing the share of younger and trained farmers and fishers, reducing the risk of social isolation, and ensuring a much improved record on health and safety.





MISSION 3

FOOD WHICH IS SAFE, NUTRITIOUS AND APPEALING, TRUSTED AND VALUED AT HOME AND ABROAD

Goal: Coherence of policies for food, health and nutrition; Enhancement of consumer trust through providing evidence of safe and ethical food production; Creation of value-add, through insight and innovation, supporting the food sector and continuing to develop market opportunities at home and abroad.

Key indicators:

- Development of coherent national and international food, health and nutrition initiatives
- Enhanced food safety, animal health and welfare
- Value and value-added in the agri-food sector
- Value of Agri-food exports

PROGRESS BY 2030

The Strategy aims for an integrated food systems approach to food and health policy;

Continued world-class standards in food safety, animal health and welfare.

Increased value-addition, and an increase in the value of agri-food exports to €21billion by 2030, built on sustainable steady value growth.



MISSION 4

AN INNOVATIVE, COMPETITIVE AND RESILIENT AGRI-FOOD SECTOR, DRIVEN BY TECHNOLOGY AND TALENT

Goal: An innovation, knowledge and technology driven sector; with improved competitiveness and resilience along the food chain; and the attraction and nurturing of diverse talent.

Key indicators:

- Level of implementation of the recommendations of the High-Level Innovation Team.
- Level of private R&D.
- Availability of public policy supports, including R&D, access to finance and on competitiveness issues specific to the agri-food sector.
- Development and implementation of a strategy for the agri-food sector on education, skills and talent attraction and retention.
- Promotion of food and nutrition security, and SFSs, as an important part of delivering on Ireland's ambition of achieving the UN aid target of 0.7% of GNI by 2030.

PROGRESS BY 2030

The Strategy envisages a more output-focused collaborative innovation system by 2030; with private R&D to reach 1% of turnover;

The agri-food sector should be more competitive and resilient, and seen as attractive by a young, diverse and talented workforce.

Ireland will advocate for Sustainable Food Systems internationally and for the development of a recognised SFS measurement or index to supplement and strengthen its vision for 2030.

Ireland's advocacy that SFSs are an important part of the deepening strategic relationship between Africa and the EU, and within Ireland's overall relationship with Africa.



III. MONITORING IMPLEMENTATION

Monitoring the implementation process is key to ensuring delivery of the strategy and to facilitate this:

- Implementation will be overseen by a **High-Level Implementation Committee (HLIC) chaired by the Minister for Agriculture, Food and the Marine**, and its key tasks will be to ensure the delivery of the four Missions and to review the annual environmental monitoring report to ensure progress towards achieving the Strategy's high-level environmental targets, consider any significant environmental effects arising and agree what remedial measures will be put in place should negative environmental trends be identified as a result of implementation of the Strategy, including consultation with relevant authorities in Northern Ireland for effects which may be transboundary, and where appropriate.
- While the composition and precise terms of reference of the HLIC should be established by the Minister, **each Mission should be considered at least once annually by the HLIC**, which may also decide to focus on particular issues or priorities. There should be **an annual review of implementation** and, where appropriate, the missions, goals and actions may need to be reviewed in light of changing circumstances within the sector or the evolving policy environment, in line with learnings from the implementation of Food Wise 2025.
- The HLIC should **engage with all the key stakeholders on a regular, planned basis**.
- An evaluation of the performance, delivery and impact of the strategy should take place at an appropriate stage during its implementation.

IV. ENVIRONMENTAL MONITORING, REVIEW AND REPORTING

The preparation of a Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) of the Strategy are intended to provide for a high level of protection of the environment during the process of preparing a plan or programme. DAFM proceeded voluntarily to the preparation stage of the SEA process. Screening was conducted for the preparation of an AA and this concluded it was required. In line with best practice, the process for developing the SEA and AA took place in parallel with the development of the Strategy and has informed the content by contributing to the integration of environmental considerations with a view to promoting sustainable development (see SEA Directive, Article 1). The SEA and AA, and associated documents, are published separately. The focus of this section is on the SEA monitoring requirements.

SEA monitoring should reflect the nature and level of detail of the plan/programme and aim to specifically monitor the impact of the Strategy. An effective monitoring framework is an essential part of the Strategy implementation process. In an effort to strengthen monitoring, there is a need to have regard to the recommendations from the Food Wise 2025 Environmental Sustainability Committee which expressed concern relating to trends in GHGs, water quality, air pollutants and biodiversity indicators. That Committee also identified that future policy should focus on developing the right measures in the right area, while acknowledging that capacity to

reduce emissions (GHG and ammonia) is limited, and ongoing close monitoring is required as part of the next Strategy. One of the key recommendations made by the Committee was that any future strategy should include flexibility to allow for an annual stock-take/analysis to allow updating of recommendations and actions to reflect the position as it develops.

The following actions will be implemented:

- **An Environmental Working Sub-Group will be established to oversee monitoring, review and reporting of environmental issues** within the confines of this Strategy. This group should report annually to the HLIC and while its composition should be determined by the Minister, it should include representation from relevant Government Departments and agencies covering the breadth of environmental issues identified in this Strategy. The functions of the group will include:
 - Monitor the indicators as set out in the SEA Statement, including the key environmental parameter indicators, set out data sources and identify any additional monitoring indicators deemed appropriate.
 - In line with the recommendation of the Food Wise Environmental Sustainability Committee and consultation feedback, indicators should be outcome focused, activity based and SMART (Specific, Measurable, Actionable, Realistic and Time-bound), where possible. Where

information gaps are identified, these will be highlighted in order to improve availability of information to inform future strategies.

- Identify thresholds/targets/trigger levels above which remedial action is required.
- Consider cumulative effects in addition to positive and negative effects.
- Determine the frequency of monitoring and report on findings.
- In line with the Directive, existing monitoring arrangements should be used where appropriate, in order to avoid duplication of monitoring. Synergies with reporting required under the new CAP and other policies such as the EU Farm to Fork and Biodiversity Strategies should be explored.
- Strategy-related implementation reports should be aligned with the environmental monitoring required under SEA legislation. This will enable the environmental performance of the Strategy to be evaluated and allow negative trends to be identified early and remedial action and responsibilities to be determined. It will also provide for increased transparency during implementation.
- Environmental assessment of associated plans and projects should be undertaken in a timely fashion and where relevant.

ABBREVIATIONS

ABBREVIATION DEFINITION

AA	Appropriate Assessment
ABC	Applied Biotechnology Centre
ABP	Anglo Beef Processors
ACE	AgriTech Centre of Excellence
ACORNS	Accelerating the Creation of Rural Nascent Start-ups
AEOS	Agri Environment Options Scheme
AHI	Animal Health Ireland
AI	Artificial Intelligence
AKIS	Agricultural Knowledge and Innovation Systems
AMBER	Advanced Materials and BioEngineering Research
AMR	Antimicrobial Resistance
APC	Alimentary Pharmabotic Centre
ASSAP	Agricultural Sustainability Support and Advice Programme

ABBREVIATION DEFINITION

BASE	Biodiversity, Agriculture, Soil and Environment
BIM	Bord Iacsaigh Mhara
BMA	Biodiversity Managed Area
BRIDE	Biodiversity Regeneration in a Dairying Environment
CAP	Common Agricultural Policy
CEO	Chief Executive Officer
CFP	Common Fisheries Policy
CMO	Common Market Organisation
CO ₂	Carbon dioxide
COP	Conference of the Parties
CPD	Continuing Professional Development
CQA	Certified Quality Aquaculture
DAERA	Department of Agriculture, Environment and Rural Affairs
DAFM	Department of Agriculture, Food and Marine

ABBREVIATION DEFINITION

DALYs	Disability-adjusted life-years
DECC	Department of the Environment, Climate and Communications
DG	Director General
DPTC	Dairy Processing Technology Centre
EBI	Economic Breeding Index
EC	European Commission
EEZ	Exclusive Economic Zone
EGD	European Green Deal
EI	Enterprise Ireland
EIA	Environmental Impact Assessment
EIF	European Investment Fund
EIPs	European Innovation Partnerships
EIT	European Institute of Innovation and Technology
EMFF	European Maritime and Fisheries Fund
EPA	Environmental Protection Agency

ABBREVIATION	DEFINITION
ESG	Environmental, Social and Governance
ESRI	Economic and Social Research Institute
EU	European Union
EUMOFA	European Market Observatory for Fisheries and Aquaculture
F2F	Farm to Fork
FA	Food Authenticity
FAO	Food and Agriculture Organisation
FFN	Farming for Nature
FGLS	Future Growth Loan Scheme
FHI	Food for Health Ireland
FIPS	Fishery Improvement Projects
FS	Food Safety
FSAI	Food Safety Authority of Ireland
FSS	Food Systems Summit
GAP	Global Action Plan

ABBREVIATION	DEFINITION
GDP	Gross Domestic Product
GES	Good Environmental Status
GHGs	Green House Gases
GI	Geographical Indicators
GLAS	Green , Low-Carbon, Agri-Environment Scheme
GNI*	Modified Gross National Income
GSSI	Global Sustainable Seafood Initiative
GVCs	Global Value Chains
HLIC	High Level Implementation Committee
HNV	High Nature Value
HSE	Health Service Executive
IBEC	Irish Business and Employers Confederation
ICMSA	Irish Creamery Milk Suppliers Association
ICSA	Irish Cattle and Sheep Farmers Association
ICT	Information and Communications Technology

ABBREVIATION	DEFINITION
IDA	Industrial Development Authority
IFA	Irish Farmers Association
IFQA	Irish Food Quality Awards
IGAS	Irish Grain Assurance Scheme
IMR	Irish Manufacturing Research
iNAP	Ireland's National Action Plan on Antimicrobial Resistance 2017-2020
INHFA	Irish Natura and Hill Farmers Association
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
ISIF	Ireland Strategic Investment Fund
IT	Institute of Technology
IUU	Illegal, unreported and unregulated
KIC	Knowledge and Innovation Community
KT	Knowledge Transfer

ABBREVIATIONS

ABBREVIATION DEFINITION

LAWPRO	Local Authority Waters Programme
LEOs	Local Enterprise Offices
LESS	Low Emissions Slurry Spreading
LGBTI+	Lesbian, Gay, Bisexual, Transgender and Intersex
LO	Landing Obligation
LULUCF	Land Use, Land-Use Change and Forestry
MACC	Marginal Abatement Cost Curve
MCPA	2-methyl-4-chlorophenoxyacetic acid
MNEs	Multinational Enterprises
MPAs	Marine Protected Areas
MSC	Management Systems Certification
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Plan
MSY	Maximum Sustainable Yield
MTI	Meat Technology Ireland

ABBREVIATION DEFINITION

NCPC	National Competitiveness and Productivity Council
NFS	National Farm Survey
NGOs	Non-governmental Organisations
NI	Northern Ireland
NPD	New Product Development
NPWS	National Parks and Wildlife Service
NSMC	North South Ministerial Council
NTMA	National Treasury Management Agency
NTTRA	National Task Team on Rural Africa
OECD	Organisation for Economic Co-operation and Development
OIE	Office International des Epizooties
OSI	Ordinance Survey Ireland
PCF	Prepared Consumer Food
PDO	Protected Designation of Origin

ABBREVIATION DEFINITION

PfG	Programme for Government
PGI	Protected Geographical Indicators
POs	Producer Organisations
PPPs	Plant Protection Products
PUFAs	Polyunsaturated Fatty Acids
QA	Quality Assurance
R & D	Research and Development
RDP	Rural Development Programme
RE	Renewable Energy
REPS	Rural Environment Protection Scheme
SAC	Special Area of Conservation
SBCI	Strategic Banking Corporation of Ireland
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SEAI	Sustainable Energy Authority of Ireland
SEEA	System of Environmental-Economic Accounting

ABBREVIATION	DEFINITION
SFI	Science Foundation Ireland
SFS	Sustainable Food Systems
SMEs	Small and medium-sized enterprises
SPA	Special Protection Area
SPS	Sanitary and Phytosanitary
STI	Science, technology and innovation
TACs	Total Allowable Catches
TCA	Trade and Cooperation Agreement
TSG	Traditional Specialities Guaranteed
TSSG	Telecommunications Software and Systems Group
UAA	Utilisable Agricultural Area
UCC	University College Cork
UCD	University College Dublin
UK	United Kingdom
UN	United Nations
UNDF	United Nations Decade of Family Farming

ABBREVIATION	DEFINITION
UPROTEIN	Unlocking Protein Resource Opportunities To Evolve Ireland's Nutrition
UTP	Unfair Trading Practices
WEF	Woodland Environmental Fund
WHO	World Health Organisation
WTO	World Trade Organisation
YAR	Year Assessment Reports

NOTES



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