



PRIORITY AREA I
SUSTAINABLE FOOD PRODUCTION AND PROCESSING ACTION PLAN
JULY 2013

Sustainable Food Production & Processing (Priority Area I)

Context

Ireland has a very favourable agricultural and food production situation. It is one of Europe's largest dairy and beef exporters, and home to several global enterprises. Global demand for food is projected to increase by 70 per cent over the next 40 years. Alongside the need to increase food production is the challenge of doing so in a manner that does not impact on greenhouse gas emissions, water quality, biodiversity or fish stocks. The focus of this priority area is on sustainable, competitive and efficient agri- & marine food production and processing which includes: land-use optimisation, forestry and non-food crops; wild fish harvesting and aquaculture; and the manufacture of safe, value added and innovative foods.

Growth in global population and changing diets in emerging countries are projected to bring about a 70 per cent increase in food demand to feed 9 billion people by 2050. The greatest challenge faced by agriculture is to meet development and sustainability goals, while increasing production. Over the coming decades, there will be increased global competition for land use. This is the 'food, energy and environment trilemma', where increased demand for food and energy combine, pressure on land conversion is increased, leading to further climate change, which in turn may affect productivity and availability of land. It has been identified that approximately 30% of the increased demand for food can be achieved through improvements in resource efficiency.

The reform of the Common Agricultural Policy (CAP) will drive further change in farming, with EU agriculture needing to meet the challenge of increasing competitiveness and environmental requirements. Challenges at processor and manufacturing level in Ireland include innovation capabilities, scale, international competition, international retail consolidation, and lack of consumer orientation in addition to the issues around energy security and reliance on carbon fuel imports.

In a national context, agriculture and fisheries combined are one of Ireland's most important indigenous sectors, employing over 150,000 people and contributing approximately €24 billion to the economy. The agri-food sector, with 7.4 per cent of national employment, accounts for around 8 per cent of GDP. Most of the enterprises in the agri sector are the 128,200 Irish family farms, of which, 63 per cent are less than 30 hectares in size. There are a number of indigenous multi-national food, agri-chemical, animal health and nutrition companies, and equipment/machinery companies some of whom are global players with substantial investments around the world. The UK at 44 per cent of exports remains the principal market (sales over €3.4 billion in 2010), and continental EU markets account for 34 per cent of food and drink exports. Irish agriculture is primarily a grass-based industry with 4.2 million hectares used for agriculture (about 64 per cent of total land area). Approximately 80 per cent of this agricultural area is devoted to grassland. Beef and milk production currently account for about 60 per cent of agricultural output. Ireland exports some 90 per cent of its net beef output, making it the largest beef exporter in the EU. Exports of dairy products and ingredients account for 29 per cent of agri-food exports. Strongest growth potential for Ireland exists in dairy, beef, prepared foods, and alcoholic beverages. The predominantly grass-based

nature of Ireland's dairy, beef and sheep-meat industries gives a competitive advantage and the sector has a global reputation due to a clean environment and high animal welfare standards.

The seafood trade is one of the world's largest and fastest growing international commodity industries. Global demand for seafood is increasing; it is estimated that an extra 40 million tonnes of seafood will be required annually by 2030. However, declining stock and increased regulation to protect the remaining seafood stock has meant that supply cannot meet demand. Aquaculture can bridge this gap. In Ireland (2010), the seafood sector contributed up to €713 million to the national economy (domestic €333m, export €379m) supporting 11,000 jobs, mostly in rural coastal areas. The Irish seafood sector is comprised of numerous small producers, with only a handful of companies performing at an international level. Ireland's ocean territory extends to 220m acres (10 times Ireland's land area) however the Irish fishing industry operates under a strict EU quota regime. The aquaculture sector consists of 850 licensed operations, on 2,000 sites, directly employing about 2,000 people, with an output of €104m in 2009. The seafood processing sector is comprised of about 200 firms, mainly SMEs, engaged in handling, distribution and processing of fish, employing 2,800 people (full & part-time). The Government's Integrated Marine Plan (Harnessing Our Ocean Wealth), adopted in 2012, sets out a roadmap to ensure our ocean wealth is a key contributor to economic recovery and sustainable growth and acknowledges that research and innovation is a key enabler for growth in the marine sector

'Food Harvest 2020' a strategy developed in collaboration with the food industry in 2010, sets out clear and achievable export targets for the sector. The food supply chain connects three important sectors of the economy: agriculture & aquaculture; the food processing industry; and the distribution sectors. The food sector is critically important to the Irish economy and is our biggest indigenous industry accounting for 58 per cent of exports by indigenous firms and employing 45,800 people. There is a significant enterprise base in Ireland in the food and drink sector, with some 700 food companies of which over 90 per cent are SMEs. The sector has a greater regional spread than any other manufacturing sector. The gross output value of the Irish food and drink sector is targeted to double from €20bn to €40bn by 2030.

The Food Harvest 2020 report also recognises the vital role research will play in developing the scientific and technical knowledge and skills needed to underpin the targets set out in Food Harvest 2020 thereby contributing to an internationally-competitive, market oriented and environmentally sustainable farming, food and forestry industry. DAFM launched in November 2011 two Industry led strategic research agenda's: Stimulating Sustainable Agricultural Production through Research and Innovation (SSAPRI) and Food Research Ireland (FRI). Based on robust stakeholder consultations, they define key areas for primary agricultural production and food research in Ireland that when delivered will drive innovation in both the agri-food production and processing sectors through ensuring application of new knowledge in respect of technologies and processes to deliver the targets set out in Food Harvest 2020.

Forestry is an important part of a sustainable agricultural and food production system. As well as its direct economic contribution, it is key to meeting international climate change targets through carbon sequestration. The output of the Irish forestry and forest products sector is currently €1.89 billion, or just less than 1 per cent of GDP.

In addition to Teagasc, Ireland has a number of HEI based research centres involved in sustainable food production and processing. There is considerable capacity and a number of state of the art research infrastructures supporting internationally renowned researchers across all of the disciplines relevant to food production. Publicly funded R&D is essential to support the primary agriculture and the marine sector. A recent US report concluded that the private sector faces weak incentives to undertake research in numerous areas relevant to agriculture and marine.

Research areas relevant to the future of Irish agriculture include: animal breeding and genetics; animal nutrition; animal fertility, health and welfare; animal product quality and safety; grass breeding, management and utilisation; soils and nutrient use efficiency; crop production; and sustainability and environmental impact of farming. Fragmentation of the primary production industries, farm level competitiveness, increased productivity and sustainability are key issues for the sector.

There has been substantial public investment in food research in Ireland over many years. Research areas that are of particular relevance to the food and drink market include: food safety; food processing technologies; food products; food business and consumer services; and nutrition and dietetics (including food and health and diabetes). Research is needed to support food sectors highly relevant to Ireland, including dairy, beef, poultry, pork, sheepmeat, organic food, seafood, processed or convenience foods, alcoholic and non-alcoholic beverage sectors, the fruit and vegetable sector; and in innovative processing or packaging technologies.

Areas of the Irish seafood sector requiring research include: added value processed seafood; sustainable management of high value inshore stocks; improving the quality of marine science related to water quality and wild fish stocks; environmentally sustainable fishing and aquaculture production methods to secure a sustainable resource base.

Sustainable Food Production & Processing

Vision/opportunity: Invest strategically in Sustainable Food Production & Processing research to drive innovation and enable the sector to achieve its full potential in a sustainable manner thereby contributing to the achievement of the overall Food Harvest 2020 Vision of Acting Smart, Thinking Green, and Achieving Growth.

Objective 1

To develop a Strategic Research Agenda, in line with Food Harvest 2020:

- which draws on existing relevant research plans which have been informed by the needs of all relevant stakeholders to facilitate growth within the Irish food sector; and
- which facilitates active participation in EU and International research activities.

Objective 2	To ensure that the skillsets of graduates, postgraduates and researchers are relevant to the needs of the stakeholders and ensure that a critical mass of researchers is in place to deliver on the Vision.
Objective 3	To ensure that research outputs from State funded research are exploited, in accordance with National IP Policy for the maximum benefit of the State, society and enterprise.
Objective 4	To ensure existing infrastructure is fit-for-purpose and managed appropriately and that future infrastructure needs are identified

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No	Action	Deliverable	Benefit	Lead	Support	Timeline
Pre-existing action						
10.1	Appendix 1 lists a range of relevant actions deriving from <i>Food Harvest 2020</i> that are already underway. Their implementation is being closely monitored by the High Level Implementation Committee chaired by Minister Coveney.	Based on Food Harvest 2020 actions, an up-to-date list of research related actions available.	Alignment of all relevant and related research actions arising for Food Harvest 2020 and the NRPE.	DAFM	Teagasc, EI, MI, Bord Bia, BIM, AHI, ICBF, Industry	Q4, 2012
Objective 1	<p>To develop a Strategic Research Agenda, in line with Food Harvest 2020:</p> <ul style="list-style-type: none"> ▪ which draws on existing relevant research plans which have been informed by the needs of all relevant stakeholders to facilitate growth within the Irish food sector; and ▪ which facilitates active participation in EU and International research activities. 					
11.1	Funding Departments and agencies to work together to implement a strategic research agenda aligned to the NRPE Priority Area “Sustainable Food Production	Streamlined, integrated, co-ordinated and focussed publicly funded competitive Calls for Research	<ul style="list-style-type: none"> ▪ Maximum value is gained from State investments. 	DAFM	All relevant funding Departments and agencies	Q2, 2014

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	& Processing”, through coordinated funding instruments.	Proposals for both basic and applied research.	<ul style="list-style-type: none"> ▪ Investments are focussed on the needs of the sector and other stakeholders ▪ Increased interaction between academia and industry. ▪ More efficient use of researchers’ time. ▪ Active participation of Irish researchers within EU and International 			

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No	Action	Deliverable	Benefit	Lead	Support	Timeline
			<p>Research Activities including the relevant JPI's and ERANets.</p> <ul style="list-style-type: none"> Enhanced ability to leverage non-exchequer funding. 			
11.2	<p><u>Interim Measure - until delivery of I3.1</u></p> <p>Use relevant parts of <i>Food Research Ireland, Stimulating Sustainable Agricultural Production through Research & Innovation (SSAPRI), Forest Research Ireland (in prep), the National Climate Change Adaptation Framework (in prep), and Sea Change to guide the content of publicly</i></p>	<p>Research aligned to the needs of end users yielding knowledge & technologies of practical use to the agri-food & fisheries industry in all its guises.</p>	<p>Enable agri-food sector to achieve growth targets set in FH 2020 in sustainable manner by overcoming challenges and increasing efficiency and productivity.</p>	DAFM	Teagasc, MI, EI, SFI, EPA	Q4, 2012

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	funded competitive Calls for Research Proposals.					
I1.3	Combine relevant elements, suitably updated, of <i>SSAPRI</i> , <i>Food Research Ireland</i> , <i>Forest Research Ireland (in prep)</i> , <i>National Climate Change Adaptation Framework (in prep)</i> and <i>Sea Change</i> together with input from other agencies, into one over-arching national strategic research agenda (SRA) aligned to the NRPE Priority Area “Sustainable Food Production & Processing” taking account of relevant ERA-NET and JPI SRA’s. (See also Action I3.1)	Research aligned to the needs of end users yielding knowledge & technologies of practical use to underpin enterprise growth and public policy formation.	<ul style="list-style-type: none"> ▪ Consolidated blueprint for the on-going guidance of publicly funded research in this priority area. ▪ Improved product, process and service innovation. ▪ Increased competitiveness of the enterprise base. 	DAFM	All other relevant funders & stakeholders	Q2, 2014
I1.4	Develop a suite of funding instruments (new, existing			DAFM	Teagasc, MI, EI, SFI, IRC, EPA	Q2, 2014

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	<p>or modifications of existing) across all relevant departments and agencies which will facilitate the following objectives:</p> <ol style="list-style-type: none"> 1. Address ‘pain points’ in innovation pertaining to this PA having regard to the respective remits of each funder. 	<ul style="list-style-type: none"> ▪ Improved and/or new inter-linked & complementary R&I support instruments. 	<ul style="list-style-type: none"> ▪ Improved innovation arising from research in this PA. 			
	<ol style="list-style-type: none"> 2. Incentivise researcher participation in non-Exchequer funded projects through use of uniform conditionality clauses in national research funding programmes. 	<ul style="list-style-type: none"> ▪ Increased involvement of Irish agri-food researchers in international consortia. 	<ul style="list-style-type: none"> ▪ Improved reputation of Irish agri-food researchers & increased draw down from external funding 			

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	<p>3. Develop best practice model to facilitate industry co-financing (including in-kind) at each step of the research continuum.</p> <p>4. Facilitate industry-academia exchange, including industry Masters and PhD programmes, but also short-term exchanges for qualified researchers in both directions.</p>	<ul style="list-style-type: none"> ▪ Burden sharing between State and Enterprise. ▪ Industry Masters / PhD programme; Instruments to include option of short-term industry-academia exchange. 	<p>sources.</p> <ul style="list-style-type: none"> ▪ Research specific to industry needs. ▪ Research students more available to solve relatively low level but nevertheless very important technical problems for industry. Improved interaction and flow of 			

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	<p>5. Provide overall framework to ensure that funding instruments are operated in a coordinated manner (including joint-calls), in terms of timing and policy with due cognisance of relevant ERANETS & JPI's.</p> <p>6. Continue to fund excellent research underpinning Sustainable Food Production & Processing through bottom-up calls.</p>	<ul style="list-style-type: none"> ▪ Co-ordinated, joined up, targeted calls. ▪ Strong research base in platform science and technology underpinning 	<p>ideas between academia and industry.</p> <ul style="list-style-type: none"> ▪ Catering for <ul style="list-style-type: none"> a) integrated research on all parts of the farm-to-fork food chain and b) research continuum from basic through to commercial. ▪ Ireland remains competitive and well positioned to respond 			

No	Action	Deliverable	Benefit	Lead	Support	Timeline
		Sustainable Food Production and Processing.	to (short), medium and long term opportunities and research demands arising through disruptive technologies and new direction.			
11.5	Active strategic participation in relevant EU & international agri-food research policy initiatives / funding vehicles e.g. ERAnets, JPI's, GRA, EIP, Food KIC, etc.	<ul style="list-style-type: none"> ▪ Non-exchequer funding leveraged. ▪ Irish researchers leading research consortia. 	<ul style="list-style-type: none"> ▪ Increased funding leveraged from non-exchequer sources. ▪ Active participation in European Research 	DAFM	Teagasc, EPA, and others	Q4, 2012

No	Action	Deliverable	Benefit	Lead	Support	Timeline
			<p>Area.</p> <ul style="list-style-type: none"> ▪ Leadership position in terms of specific research areas. ▪ Excellent science base developed through enhanced networking. 			
Objective 2	To ensure that the skillsets of graduates, postgraduates and researchers are relevant to the needs of the stakeholders and ensure that a critical mass of researchers is in place to deliver on the Vision.					
12.1	<p>Revise third level curricula in line with the recommendations of:</p> <ol style="list-style-type: none"> 1. The National Strategy for Higher Education to 2030. 2. Innovation Ireland. 	Relevant skillsets identified and third level curricula revised.	<ul style="list-style-type: none"> ▪ Graduates with the required skillsets to work in enterprise sectors 	HEA	All other relevant funders & stakeholders; Expert Group on Future Skills	Q2, 2014

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	3. Report of the Expert Group on Future Skills “Future Skills Needs for the Food and Beverage Sector 2009”.		<p>associated with this PA.</p> <ul style="list-style-type: none"> ▪ Better alignment of skillsets with the needs of the sector to facilitate economic growth. 			
12.2	<p>Develop a self-sustaining Agricultural, Food & Forestry Graduate Development Programme building on the one already developed and presently funded by DAFM to:</p> <ol style="list-style-type: none"> 1. Ensure a broadened skills base. 2. Respond to the differentiated level of need by industry particularly among food SME’s. 	Postgraduates / researchers attain the required skillsets to work within the sector.	<ul style="list-style-type: none"> ▪ Improved competitiveness within the sector. ▪ Increased level of innovation in terms of products, processes and services. 	HEA	All other relevant funders & stakeholders	Q2, 2014

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	<p>3. Be part of a campaign to raise industry awareness of the benefits to be gained from the recruitment of skilled graduates.</p>					
12.3	<p>In line with Government Policy:</p> <p>1. Identify key senior and/or permanent researcher posts in, RPOs¹ (Teagasc & MI) and in the HEIs necessary to meet the vision of this PA.</p> <p>2. Develop a mechanism to fill these positions².</p> <p>3. Identify and fill junior research positions where critical mass does not exist and is necessary to meet the Vision of the PA.</p>	<p>Critical mass of researchers to deliver on the Vision.</p>	<ul style="list-style-type: none"> ▪ Help deliver on expected increased outputs for the agri-food and fisheries sector under FH 2020. ▪ Research capacity that can be exploited by enterprise. 	D/EPR & HEA	Funding agencies	Q2, 2014

1 RPO-Research Performing Organisation

2 For example, a similar scheme could be developed along the lines of the protected Clinician positions funded by the HRB

No	Action	Deliverable	Benefit	Lead	Support	Timeline
Objective 3	To ensure that research outputs from State funded research are exploited , in accordance with National IP Policy for the maximum benefit of the State, society and enterprise.					
13.1	Modelled on EU Bio-economy Strategy Panel & European Innovation Partnerships ³ , establish a <i>single</i> stakeholder Group to inform and monitor the outputs of the initiatives funded in line with the SRA ⁴ .	Discussion platform and flexible framework with a clear mandate in place to support interaction, strategic planning and implementation of the SRA.	<ul style="list-style-type: none"> ▪ Opportunity for all stakeholders to be involved in the discussion in relation to this PA. ▪ Assurance that the research is reflective of the needs of all 	DAFM	All stakeholders	Q2, 2014

³ EU Bioeconomy Panel will be composed of the relevant European Commission services, representatives from member states with responsibility for the bioeconomy, representatives of relevant stakeholder groups. The Panel will be chaired by the Commission. EIP on “Active and Healthy Ageing” and EIP on “Agricultural Sustainability and Productivity”

⁴ The Group should include representatives from key stakeholder groupings such as policymakers, funders, research performers, industry and end users and should build on the existing Advisory Groups (i.e. AREA, FREA, HRG, National SG JPI HDHL etc.)..

No	Action	Deliverable	Benefit	Lead	Support	Timeline
			stakeholders. <ul style="list-style-type: none"> Economic growth achieved in line with targets for the sector. 			
13.2	In line with National Intellectual Property Policy: 1. Develop a dissemination strategy that is applicable and relevant for this PA. 2. Develop / build on existing initiatives ⁵ to facilitate technology and knowledge exchange between academia and enterprise with particular reference to food SME's and Micro scale companies. 3. Develop initiatives to	Technology and knowledge transfer initiatives relevant and appropriate to the needs of the sector.	<ul style="list-style-type: none"> Streamlined and more tailored communication. Improved competitiveness. Increased level of innovation in terms of products, processes and 	DAFM/HEA/EI	All funders	Q2, 2014

⁵ This could be based on the recently launched Teagasc Technology & Knowledge Transfer Strategy.

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	facilitate knowledge exchange and transfer between academic and the health services / Government Departments / State Agencies.		services & improved efficiency & productivity on farms.			
Objective 4	To ensure existing infrastructure is fit-for-purpose and managed appropriately and that future infrastructure needs are identified					
I4.1	Extend existing or develop new inter-institutional collaborative alliances focused on areas of this PA that are of particular strategic importance.	New or improved inter-institutional strategic alliances.	Improved critical mass	RPO's		Q4, 2012
I4.2	Identify all research activities of relevance to this PA ⁶ with a view to facilitating collaboration; exploiting synergies and maximising	<ul style="list-style-type: none"> Alignment of research activities which stimulates 	<ul style="list-style-type: none"> Maximum gain from State investments achieved. 	All funders & RPO's		Q2, 2014

⁶ Including for example Food for Health Research Initiative, Food Health Ireland, NutraMara, Alimentary Pharmobiotic Centre, Gylcoscience Research, Nutrition Databases / Surveys / surveillance studies; SLAN, Growing up in Ireland, Longitudinal Study in Ageing

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	impact.	<p>greater collaboration and eliminates unnecessary duplication of effort.</p> <ul style="list-style-type: none"> ▪ Rules of engagement to facilitate formal collaboration ▪ Identification of industry relevant platform technologies. 	<ul style="list-style-type: none"> ▪ Improved and more efficient use of the critical mass. ▪ Platform technologies of relevance to enterprise identified. ▪ Exploitation by enterprise of the research base. ▪ 			
14.3	<p>Plan to ensure access to necessary infrastructure</p> <ol style="list-style-type: none"> 1. Map large scale research infrastructure /facilities (>€500k) currently 	Shared services protocol.	<ul style="list-style-type: none"> ▪ Ensure that research is not hindered by lack of access to 	HEA	All funders & RPO's	Q2, 2014

No	Action	Deliverable	Benefit	Lead	Support	Timeline
	<p>available in Teagasc, RPOs & the HEIs and develop protocol for shared access to it by other RPO's and industry.</p> <p>2. Identify key major international research infrastructures abroad of strategic relevance to this PA & develop unified national plan by which all relevant / interested public RPOs can access it on preferential terms.</p> <p>3. Identify necessary research infrastructures that are not available to Irish researchers and industry either nationally or abroad (at a cost effective rate) and develop prioritised list to inform future infrastructure funding calls.</p>		<p>necessary infra-structure.</p> <ul style="list-style-type: none"> ▪ Better value for money. ▪ International linkages. ▪ Strategic focus to future infra-structure funding calls. 			

No	Action	Deliverable	Benefit	Lead	Support	Timeline
14.4	Explore the possibility of Teagasc becoming involved in spin-out companies resulting from its research activities.	Technologies developed on foot of public funding commercialised.	<ul style="list-style-type: none"> ▪ Increased competitiveness of the sector. ▪ New products, processes and services delivered for the sector. 	Teagasc		Q2, 2014

Appendix 1: Relevant Actions from Food Harvest 2020

References to recommendations below relate to FH2020

Food Harvest 2020 - Farm Level Challenges	Lead	Support	Progress to Date	End Date
3.1.1 DAFF should continue to promote active involvement of researchers from institutes and industry in relevant international research projects consortia and initiatives including, in particular the EU's Framework Research Programme	DAFM	Teagasc	Up to date progress in attached link - recommendation 15 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.1.2 Teagasc agricultural research should prioritise the following areas: i) animal breeding; ii) grass breeding, evaluation and utilisation iii) environmental research relating to climate change and water quality; iv) tillage and bio-energy research and v) economic analysis of policy change and market developments on agriculture and farming.	Teagasc		Up to date progress in attached link - recommendation 16 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed and ongoing
3.1.3 DAFF, in conjunction with relevant stakeholders, should establish a key stakeholder group to develop the Irish dairy and beef sectors into global leaders in the genomics field and develop communication channels to encourage uptake at farm level.	DAFM , Teagasc, ICBF		Up to date progress in attached link - recommendation 17 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed and ongoing
3.1.4 DAFF should establish structures to facilitate greater input and resources from the agriculture industry into the design and structure of primary research programmes.	DAFM	All	Up to date progress in attached link - recommendation 21 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed and ongoing

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3.1.5 Consideration should be given to innovative funding mechanisms to support agricultural production research including co-financing by industry.			Up to date progress in attached link - recommendation 22 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.1.6 Teagasc should improve the level of dissemination and adoption of available knowledge and best practice options on farm competitiveness. Specific benchmarks should be established and reported upon in terms of progress and comparisons with key competitors.	Teagasc		Up to date progress in attached link - recommendation 11 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing with end-year assessment
3.1.7 Relevant agencies should increase adoption levels of best practice in animal health and breeding.	Teagasc, AHI, ICBF		Up to date progress in attached link - recommendation 12 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.1.8 All relevant stakeholders should place a greater strategic emphasis on advisory programmes, such as Teagasc BETTER FARM, which focuses on low-cost production methods.	Teagasc		Up to date progress in attached link - recommendation 13 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest 2020 - Industry Level Growth				
3.2.1 Industry investment in R&D should be doubled as % of turnover by 2020 in line with the following targets: Sector : Current Average: 2020 Target Beverages/Bakery : 0.5% : 1% Dairy Functional Foods : 0.5% : 1% Consumer Foods : 1.1% : 2% Primary Meats : 0.5% : 1%	EI		Up to date progress in attached link - recommendation 37 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest 2020 - Environment				
3.3.1 Continued investments in research should			Up to date progress in attached link - recommendation 40 refers	Ongoing

be made to develop technologies and approaches required to make Ireland a world leader in the sciences related sustainable agricultural and food production.			http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	
3.3.2 An industry-research-agency partnership should be directed to developing a food standard based on a standardised carbon life-cycle analysis.	Bord Bia, Teagasc		Up to date progress in attached link - recommendation 41 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed and ongoing
3.3.3 DAFF, in consultation with other relevant parties, to lead Irish involvement in related international research activities such as the Joint Programming Initiative on “Agriculture, Food Security & Climate Change” and in the NZ-led Global Research Alliance of Agricultural Greenhouse Gases.	DAFM	Teagasc	Up to date progress in attached link - recommendation 46 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed and ongoing
3.3.4 Teagasc must ensure that farmers are given the appropriate advice and information, based on quality research, to enable them to refine their production methods to reduce carbon intensity and further improve environmental performance.	Teagasc		Up to date progress in attached link - recommendation 42 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food-Harvest - Customers				
3.4.3 Teagasc-led scientific research which underpins Ireland’s sustainability claims and validates the environmental and nutritional benefits of grass-based rain fed production.	Teagasc		Up to date progress in attached link - recommendation 55 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed and ongoing
Food Harvest - Value Added Food & Drink Sector				
3.5.1 The Committee endorses the recommendations in the Report of the Innovation Task Force and underlines their particular relevance to the food industry.	EI	Bord Bia	Up to date progress in attached link - recommendation 72 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.5.3 Industry must prioritise investment in	Indus	EI	The recommendation is primarily addressed at industry. Up	Ongoing

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consumer focused innovation, new product development and development.	try		to date progress in attached link - recommendation 73 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	
3.5.4 Actively pursue the establishment of 2 new industry- led research centres.	EI			Completed
3.5.5 To build on the work of the existing industry led food research committee, inter-agency collaboration is required to formalise strategic, commercially focused research. [Basically anticipating action needed after publication of NRPE]			Up to date progress in attached link - recommendation 74 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.5.6 Relevant bodies should focus on the improvement of commercial orientation by better targeting of research on emerging market opportunities and developing consumer trends.			Up to date progress in attached link - recommendation 77 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.5.7 Linkages and collaboration between research institutes and industry organisations, such as Food for Health Ireland must be developed so that the activities of research institutions are grounded in the downstream requirements of a competitive food and drink industry.	EI		Up to date progress in attached link - recommendation 78 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.5.8 Research and innovation resources in different institutes (state agencies, and universities) should work closely to maximise their synergies and increase overall effectiveness. This is currently exemplified through the recently announced Teagasc - UCC Strategic Alliance in Food Research.			Up to date progress in attached link - recommendation 79 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest - Beef				
3.6.1 Strong collaboration between State agencies is required to ensure that relevant research outputs are applied at farm level,	Teagasc		Up to date progress in attached link - recommendation 101 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed

especially through the greater use of the BETTER farms programme and discussion groups.			012/FH2020230812.pdf	
3.6.2 Greater research efforts and strong communication programmes from Bord Bia and Teagasc should be developed to outline the opportunities and requirements for profitable domestic production systems for calves from the dairy herd.	Teagasc	Bord Bia	Up to date progress in attached link - recommendation 105 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.6.3 Teagasc will research the eating quality of bull beef to ensure maximum return from this expanding sector.	Teagasc		Never got the final outcome on this ?	
3.6.4 Develop a new research programme in collaboration with the meat industry to increase the value of waste streams in the sector.			Discussions have been held between EI, IBEC and meat industry representatives to scope the research priorities for the industry. Further work is underway by the industry partners	Ongoing
3.6.5 Research must continue into strategies to reduce GHG emissions in the sector, with involvement in international research initiatives on the issue - this research should include efforts to identify new technology based mitigation strategies, efforts to improve all GHG related herd management parameters (breeding, fertility, nutrition, etc) and efforts to improve quantification of all emissions and mitigation efforts. [Also applies to DAIRY]	Teagasc	Other RPOs	Up to date progress in attached link - recommendation 106 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.6.6 DAFF, Teagasc and producers should endeavour to continually improve knowledge dissemination and adoption of best practice in beef production through initiatives such as the Better Farm Beef programme (in conjunction with the Farmer's Journal).	Teagasc		Up to date progress in attached link - recommendation 100 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.6.7 Given the improved feed conversion efficiency offered by young bull beef production, market-led production systems for young bulls from both the beef and dairy herd			Up to date progress in attached link - recommendation 103 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing

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should be encouraged through enhanced research with clear price incentives that result in animals being finished to meet market specifications.			012/FH2020230812.pdf	
3.6.8 The positive environmental, human-health and animal-welfare attributes associated with grass-fed beef and sheepmeat should be credibly established with a view to building them into marketing opportunities for Ireland. In addition, environmental criteria should be built into Quality Assurance schemes.	DAFM , Teagasc, Bord Bia		Up to date progress in attached link - recommendation 114 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Completed
Food Harvest - Dairy				
3.7.1 The processing sector, supported by Enterprise Ireland, Teagasc and third level institutions, must develop an investment strategy that will facilitate more commercially focussed R&D.	DAFM , EI	SFI, all other RPOs	This is an industry directed recommendation Up to date progress in attached link - recommendation 128 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.7.2 Launch the IDB Dairy Innovation Centre in collaboration with Teagasc to generate a pipeline of branded milk-based consumer products.			The new Dairy Innovation Centre has been launched and is currently developing four new value -added cheese products, which will be commercialised and marketed internationally by IDB members	Ongoing
3.7.3 Teagasc will integrate a facility for Dehydration Technology into its existing research programme on 'Smart' dairy ingredients that have built-in functionality for food applications worldwide.			Industrial clients working to develop a new ingredient/ process, building on their existing use of Teagasc's integrated dehydration pilot plant facility.	Ongoing
3.7.4 DAFF and Teagasc should encourage primary producers to optimise efficiency by adopting new technology and best commercial practice.	DAFM , Teagasc		Up to date progress in attached link - recommendation 126 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.7.5 DAFF and livestock industry should			Up to date progress in attached link - recommendation 122	Ongoing

continue to support Teagasc and ICBF in their programme of genetic improvement, including the application of new and emerging genomic technologies that will contribute to a more profitable dairy farming sector.			refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	
Food Harvest - Sheep				
3.8.1 The sector must improve the uptake of new technology on farms through the greater use of discussion groups and the Teagasc BETTER farms programme for sheep.	Teagasc		Up to date progress in attached link - recommendation 133 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest - Pigs				
3.9.1 Teagasc should enhance its programme of benchmarking pig herd performance to both monitor progress and support a revitalised programme of knowledge transfer. Producers, with the assistance of Teagasc, must focus on increasing sow productivity through the adoption of new technologies and best practice.	Teagasc		Up to date progress in attached link - recommendation 159 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest - Horticulture				
3.10.1 Relevant state agencies should foster product and production innovation, the adoption of emerging technologies and plant breeding.	Teagasc, Bord Bia	EI	Up to date progress in attached link - recommendation 146 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest - Organic Production				
3.11.1 Teagasc should continue to carry out specific research, innovation and product development.	Teagasc		Up to date progress in attached link - recommendation 156 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing

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Food Harvest - Cereals					
3.12.1	Teagasc should continue to undertake research into low input, more efficient and more environmentally friendly production systems and ensure that relevant research is applied at farm level.	Teagasc		Up to date progress in attached link - recommendation 172 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.12.2	Research should be undertaken into high value areas such as biopharmaceuticals, bioplastics and bioremediation.	Teagasc		Up to date progress in attached link - recommendation 175 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest - Poultry					
3.13.1	DAFF and Teagasc should promote research into, and adoption of new technologies and practices aimed and improving efficiency, increasing return on investment and improving environment protection.	DAFM	Teagasc, other RPOs	Up to date progress in attached link - recommendation 180 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
Food Harvest - Seafood					
3.14.1	The development and research strategies for seafood, Food Harvest 2020, "Sea Change, a Marine Knowledge, Research and Innovation Strategy for Ireland 2007-2013" and Food Research Ireland, supported by DAFM, BIM, Marine Institute, Bord Bia, EI and industry, should continue to guide immediate seafood research priorities, consistent with available resources.	DAFM, MI	BIM, Bord Bia, EI	Up to date progress in attached link - recommendation 185 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.2	Support the development of innovative, consumer oriented seafood products through the BIM Seafood Development Centre and Teagasc	BIM	Teagasc	Up to date progress in attached link - recommendation 187 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing

Ashtown Food Research Centre.			012/FH2020230812.pdf	
3.14.3 Continue and intensify the R&D programmes on marine biotechnology development and marine functional foods.	MI	Other funders	Up to date progress in attached link - recommendation 188 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.4 Accelerated the implementation by the sector of quality and traceability labelling, including voluntary labelling and certification, for Irish fish products, with appropriate supports from BIM and Bord Bia, to differentiate Irish products on domestic and export markets.	BIM/ Bord Bia	Industry	Up to date progress in attached link - recommendation 192 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.5 The implementation of a specific Inshore Fisheries Management framework should proceed as speedily as possible, to allow sustainable management of high value inshore stocks, consistent with conservation requirements.	DAFM		Up to date progress in attached link - recommendation 194 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.6 Resolve current difficulties related to Aquaculture licensing, to facilitate timely issuing of new and renewed aquaculture licenses consistent with EU conservation directives.	DAFM		Up to date progress in attached link - recommendation 196 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.7 Work with industry to research and develop inshore and offshore aquaculture and alternative species on a commercial and profitable scale.	BIM, MI	Industry	Up to date progress in attached link - recommendation 197 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing

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			012/FH2020230812.pdf Decision expected Q1 2013	
3.14.8 Continue taking a lead role in improving the quality of marine science related to water quality, seafood safety and wild fish stocks.	MI		Up to date progress in attached link - recommendation 198 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.9 DAFM, BIM and MI should promote the development of long-term management plans for fish stocks having regard to the need for environmental and social sustainability.	DAFM, MI, BIM	Industry	Up to date progress in attached link - recommendation 199 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing
3.14.10 Continue to develop environmentally sustainable fishing and aquaculture production methods to secure a sustainable resource base and to underpin the development of a smart, green and clean image which contributes to the overall strategy for the food industry.	BIM, MI	Industry	Up to date progress in attached link - recommendation 200 refers http://www.agriculture.gov.ie/media/migration/publications/2012/FH2020230812.pdf	Ongoing

Forfás



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