THE RACE TO FUTURE-PROOF THE FOOD SECTOR

It has been said that the first step to solving a problem is to recognise there is one. Scientists, campaigners, policy experts, consultants and even some major companies have been saying for some time that the food system is broken.

However, at the Belfast Summit on Global Food Integrity earlier this year it became clear that perhaps policymakers (and even politicians?) are now prepared to admit it too. We are about to walk into a “great disruption”, suggested Dr John Bell, director of the bioeconomy at DG Research and Innovation in the European Commission. “We need to future proof our food system [and] we can’t do that without reviewing the system,” he said.

Just prior to the Summit, the European Commission had confirmed (in its agricultural spending review) that €10 billion from the next research programme – Horizon Europe, running from 2021 to 2027 – would be dedicated to food and natural resources (that’s about 10% of the total budget). “We are very serious about taking this discussion forward,” said Bell. “It is a doubling of our current commitment.”

It’s a significant shift in approach, according to some of the industry leaders I spoke to in Belfast. Historically, the food sector has been down the European Commission’s pecking order, they said – it’s seen as a “very strong sector” and people had enough (cheap food) to eat. “There were always other sectors seen as higher priorities, but that is changing,” a director at a multinational food brand explained.

Consider the challenges that loom large and you might say ‘it’s about time’. Climate change, as this summer’s droughts again
provided, is already creating significant challenges, and producers have been warned to expect more crop losses from extreme weather, greater damage from pests, and further pressure on water security. The nutritional quality of some foods could also plummet. In August, a paper published by Harvard Chan School of Public Health showed how rising levels of carbon dioxide from human activity are making staple crops like rice and wheat less nutritious – by 2050, 175 million people could become zinc deficient and 122 million could be protein deficient. The billions of people currently living with nutritional deficiencies would also likely see their conditions worsen as a result of less nutritious crops, the authors said.

Meanwhile, in September, the UN’s annual state of food security and nutrition report provided a sobering analysis of the state of play. The number of hungry people in the world is growing and limited progress is being made in addressing the multiple forms of malnutrition, ranging from child stunting to adult obesity. What’s more, the gains made in ending hunger and malnutrition (as per the Sustainable Development Goals) are being “eroded” by climate variability and exposure to more complex, frequent and intense climate extremes. As Bell suggested at the Belfast Summit: without food and nutritional security there is no security.

Further evidence of the “imbalance” in food systems is waste. As the third largest emitter of greenhouse gases after China and the US, the issue perhaps justified its own “seat at the UN”, quipped Bell. However, this is another serious threat: the EU alone produces 88 million tonnes of food waste a year, and the associated costs are estimated at €143 billion. That ‘waste’ could potentially feed 200 million people. Not only are the current systems wasteful, they are also “making us sick”, according to Cécilia Rocha, director of the School of Nutrition at Ryerson University (Toronto). Presenting the results of a report for the International Panel of Experts on Sustainable Food Systems (IPES) in Belfast, Rocha said the food system has been successful, generally, in creating affordable food that is safe, but the system is “at risk”. Rocha and her colleagues have unpicked the food system and discovered that many of the most severe health impacts – from respiratory diseases to a range of cancers and systemic livelihood stresses – are linked to industrial food and farming practices.

The above is by no means an extensive list – there’s also soil degradation to consider, for example, as well as the potential impact of genetically modified crops and pesticides, not to mention fair pricing and plastic packaging. Indeed, consider the current health impacts alongside the social and environmental impacts and the case for a complete overhaul of our food systems becomes all the more compelling. “We have a food system that is changing, that is under threat,” said Pamela Byrne, Food Safety of Ireland CEO, “but what is the solution?”

Indeed, once we are all on the same page and have admitted there is a problem, the next step is to start thinking about possible solutions. This is where the EU Commission’s €10 billion will come in handy, but there is another pan-European project tackling some of these issues. Launched in November 2016, EIT-Food (the European Institute of Innovation and Technology’s new food programme), connects 50 partners from leading businesses, universities, research centres and institutes across 13 countries in Europe and from the entire food value chain. From the UK, the universities of Reading, Cambridge and Queen’s University Belfast are all involved, but flick through the partners list and you will find everyone from John Deere and PepsiCo to Siemens and Sodexo. “There is no initiative even close to this,” said Ellen de Brabander, senior VP for research and development at PepsiCo and the former (and first) CEO of EIT-Food.

The programme’s ambition is laudable: to redesign the way we produce, deliver, consume and recycle our food and to create a future-proof and effective food sector that supports a sustainable and circular bio-economy. It has seven years and €1.2 billion (25% from EU and 75% from partners) to make a start, but just a year in and there are already some “exciting signs” of what’s
possible in this kind of collaboration, Filip Fontaine told safefood, in his first interview as the initiative’s interim CEO. “EIT-Food is about bringing together the people who have the skills and the reach to change things,” he explained. “People can be working in silos and on their own ‘islands’ so this collaborative approach will move things up a gear.”

EIT-Food is all about tapping into near-market innovations – turning all the great work that’s going on at research institutes, amongst start-ups and within global corporates into commercial solutions. There are four broad themes, namely:

• Personalised healthy food.
• The digitalisation of the food system.
• Consumer-driven supply chain development, customised products and new technology in farming, processing and retail.
• Resource-efficient processes, making food more sustainable by eliminating waste and recycling by-products throughout the food chain.

Scan the new website and you get a feel for the breadth of projects underway – covering everything from alternative proteins (to relieve pressure from livestock – a major producer of greenhouse gases) and food fraud, to sustainable diets. For instance, there is one involving training graduate students in processing, fractionation and characterisation of algal components – skills that can be used to develop innovative food products based on microalgae components. The German Institute of Food Technologies meanwhile is developing sustainable plant-based protein sources for the bakery sector. Another project involves generating hand-held technology to assess the freshness, nutritional value and identity of certain types of fish, while in the Games of Foods project, experts will design an “escape game” based on food-related puzzles and riddles to help improve awareness of healthy and balanced diets (a nut which has to date proved hard to crack).

Unfortunately, the detail available is sparse – it’s early days and things will take time, Fontaine admits. However, there have already been some tangible results. The circular food generator track, for example, challenges masters students to develop ways to valorise food waste from manufacturing and retail with “high commercial potential”. Early streams include bread, potatoes and bananas and the 10-month challenge ends with a competition between the teams and one innovation using banana peels could soon be picked up by major retailers. Unfortunately, Fontaine can’t provide any more detail, but says he likes the idea because it was simple (“bananas are not high tech”), involved students, universities and retailers and was commercially scalable. “It also wouldn’t have happened without EIT-Food,” he says.

Some of the research will be much harder to convey, of course – there are some involving “plant-based ice-structuring proteins”, and one that will look at the benefits of feeding poultry insects and probiotics in order to reduce pathogens and antibiotic resistance in the birds. However, every project is tested against its potential benefit to people: the last thing the collaborators can afford to do is make an app that no-one will use, or create a healthy snack that people won’t eat. “That’s just a waste of time, effort, money and talent,” Fontaine says. This is why an integral project will be the trust barometer. “We are trying to measure trust not in food labels but in the food system as a whole,” he says. “And we also want to help people – we want to show them that food is healthy and it’s valuable.”

And with only €1.2 billion EIT-Food has to make every cent count. “It’s 100% not enough funding,” says one of those involved in the programme. Only a few days before the interview, Fontaine had used a speech at a conference in Bulgaria to call on member states and the EU to show “strong support” for research and innovation in the agri-food sector. “This is not a small task, and the challenges we face are not small either,” he said. An understatement if ever there was one.

ABOUT DAVID BURROWS

David is a freelance writer specialising in sustainability and food/retail. A graduate in agricultural sciences, and a postgraduate in periodical journalism, David is currently freelance writer, editor and researcher for several food/business publications, including Poultry Business, Farmers Guardian and Retail Week.
A Day in the Life

We talk to Dr Ann McMahon at Queens University Belfast about her role as Business Alliance Manager for Agri-food and Nutrition Sciences

Over the past decade, increased collaboration between industry and research bodies has led to more impactful research and innovative product development. Dr Ann McMahon – whose role it is to encourage and support collaborative efforts between agri-food businesses and researchers at Queen’s University Belfast (QUB) – explains: “It used to be the case that the value of research was weighed against publication, but now it is about the impact of that research. Universities need to be engaging with public bodies and the private sector to ensure this is achieved. QUB sees considerable value in working with a whole range of external parties outside of academia to ensure the research that is happening in QUB is shaped by the end users: that it is impactful and has a role in society.”

Ann is Business Alliance Manager for Agri-food and Nutrition Sciences at QUB. Her role involves encouraging joined-up thinking between researchers within the university and partner organisations from the business community, the public sector, and voluntary and charitable sector. “I connect our researchers working in the area of agri-food and nutrition, and related areas, with businesses and organisations operating in the relevant sector to try to develop fruitful collaborations between the two. I have a good handle on what expertise each researcher in the university has, so I link up the right researchers with the right companies.”

Ann has established strong connections in the private sector and also meets up with food companies at events and conferences where she gets an insight into their needs regarding R&D. In some cases, companies also approach her with more specific requests. “I want to pair them with the right team and encourage them to start engaging together. Hopefully it will end in a piece of research going forward, but it doesn’t always. However, it is about getting the conversation going. We need to get researchers into the mindset of knowing what a company might want or need and the best way to do that is get them talking to each other. My job is almost like a broker.”

The second part of Ann’s job is to support these partnerships as they progress. “I look at funding opportunities that could help in moving a project forward and I also assist with the necessary legal items related to the agreement and facilitate negotiations here.”

“It is quite a full remit,” she continues. “I work with businesses right across the food chain, from meat producers and seaweed farmers to large global companies and supermarkets. Some companies approach us with a very specific request where they have already identified what research they are looking to undertake; and other companies might come to us with a more open-ended query, such as maybe having a waste product that they think might offer some value to their operation.”

Ann notes that these partnerships are all mutually beneficial and drive further collaborations within the academic field. “What I find really rewarding is being able to bring different research teams together who wouldn’t normally work together. I am
For some people food security is about ensuring reliable access to markets so that supermarket shelves are stacked high with both staple ingredients and exotic produce all year round. Others frame it as an issue of self-sufficiency – a country’s ability to grow enough food to meet its own nutritional needs.

These are both legitimate viewpoints; but there’s a growing realisation among governments, academics and businesses that long-term food security can only be achieved if that same food can be produced within the capabilities of our planet.

The productionist model of food supply that has gone largely unchallenged since WWII has been hugely successful in producing plentiful supplies of cheap, uniform, largely safe food. And although an estimated 805 million people were still suffering chronically from hunger in 2014 this is more to do with inequality in distribution and access rather than an overall lack of calories – in fact, the average world supply of calories was over 2,800kcal per person per day in 2013.

But the market has become increasingly driven by what citizens, particularly in the developed world, prefer to eat rather than what we need to sustain ourselves. Consider, for instance, the explosion in the consumption of meat, dairy and processed food products in recent decades that has meant average world fat supply has grown from 48g per person per day in 1961 to 83g in 2013 and is almost double that figure in North America. This, in turn, has created a new form of malnutrition in the 2 billion people worldwide that are overweight or obese with the result being that non-communicable diseases such as heart disease and type 2 diabetes linked to poor nutrition are now the leading cause of death in all regions except Africa.

Producing cheap food – at what cost?

The evidence is stacking up that the bountiful supply of cheap, convenient food that many of us now take for granted has come at significant cost not only to our own health but to the health of the planet too. In 2009, a group of 28 internationally working with some food companies at moment and the areas of research include pharmaceutical, molecular biology and polymer processing."

Discussing current trends, Ann explains that she is overseeing a number of projects that are focusing on developing opportunities into export markets beyond the UK. “If they can achieve a few days extra shelf life on a product that means they can move further out when it comes to market reach. We are looking into novel innovative methods to do this, dedicating a wealth of expertise and capabilities to come up with solutions.”

The university also has close connections with safefood. “We have successfully been awarded safefood research projects and have provided research back to safefood. There is very good interaction between the two organisations and I have been involved in connecting that up.”

Overall, Ann says that she has witnessed a growing appetite within the agri-food industry for increased collaboration in recent years: “it is clear to me that the agri food supply chain is very open to finding out how a university could help them in their sustainability as a company and in the sustainability of the supply chain they are a part of… they see the need, to ensure they remain competitive.”

**ABOUT ANN**

**Where did you grow up?** I grew up on a dairy farm in Minterburn – a tiny rural community in Co Tyrone.

**What hobbies do you enjoy?** I enjoy hill walking and reading crime fiction.

**Do you like to cook?** I love to cook and am currently working my way through Jamie Oliver’s 5 ingredients cookbook.

**What are you reading right now?** My favourite author at present is Peter James who wrote the best book ever – Dead Simple!
Laboratory Analyst Edward Leslie works for the Department of Agriculture Food and Marine. He recently took part in the safefood Training & Mobility Funding Programme, which funded his attendance at the Fifth Congress for European Association of Veterinary Laboratory Diagnosticians (EAVLD) in Brussels.

Edward, who works in the Sligo Regional Veterinary Laboratory, went to the three-day conference organised by EAVLD who have a mission to improve veterinary and public health by providing a platform for communication among veterinary laboratory diagnosticians and promote the highest standards in European veterinary laboratories. “The main objective of attending was to take the knowledge and skills gained at the conference and apply it in my current role in Ireland, and subsequently to improve disease surveillance, food protection, animal/food health, and disease diagnostics in Ireland and Europe,” he explains. “Other aims of attending included; meeting and conversing with experts in animal disease diagnostics, manufacturers of animal disease diagnostic kits, and to give me a wider view on the future of disease surveillance in Europe.”

There were over 70 lectures across the three days, presented by some of the most experienced people in the field of animal disease diagnostics in Europe. “Some of the key lectures included; foot and mouth on farm testing, antimicrobial resistance, spread of the bluetongue disease in Europe, and the current outbreak in African swine fever in Europe, among others,” Edward notes.

After the conference, Edward was able to share a back to office report with both his own colleagues in the laboratory and other regional veterinary laboratories. As well as giving him the opportunity to meet people from across Europe, the conference provided Edward with information on new diagnostic tools. He explains, “It gave me a great insight into the future of animal disease diagnostics and of the severe threats emerging with new and exotic diseases that could affect Irish food safety in the future.”

Edward enjoyed the experience and says: “I would strongly recommend people to apply for the Training and Mobility Funding Programme as it has helped to enhance my skills and knowledge in disease diagnostics and to improve food safety in Ireland.

**ABOUT THE SAFEFood TRAINING AND MOBILITY FUNDING PROGRAMME**

The programme enables members to visit and spend time in another organisation to develop their knowledge/expertise in an area related to food safety. Participants can broaden their expertise, exchange knowledge and facilitate collaboration to enhance food safety between organisations, sectors and/or disciplines. The programme is exclusive to Knowledge Network members and offers bursaries up to €1,200 or sterling equivalent per applicant. Previous successful applicants have included Environmental Health Officers, food testing laboratories staff, food industry personnel, food safety researchers, as well as those working in academia.

*For information on the 2019 programme please keep an eye out on www.safefood.eu.*
RECENT EVENTS

Participants and trainers at the Introduction to Microbiology, Method Validation, Verification and Measurement of Uncertainty course that was held in the safefood office in Cork.

LABORATORY TRAINING

The Knowledge Network organised two day courses on Introduction to Microbiology Method Validation/Verification and Measurement of Uncertainty for food safety laboratory staff across the island. The course allowed food testing laboratory staff to understand concepts, terminology, sources of information and approaches to method validation. It also covered how laboratory verification methods can be correctly performed and estimating uncertainty, including how to interpret/report results using measurement uncertainty. The courses were held in Belfast, Dublin and Cork in September and October with 44 participants from both public and private food safety laboratories. The feedback was very positive with 100% of attendees saying that they would recommend the course to their colleagues.

FOOD SAFETY WORKSHOPS - ROUNDUP OF 2018

During 2018, safefood hosted 11 food safety workshops throughout the island of Ireland, in partnership with Teagasc. The aim of these workshops was to help small and medium-sized food businesses and provide practical advice on good food safety practices. Guest presenters from the Food Safety Authority of Ireland and local food businesses also took part. Workshops were attended by 221 participants representing 120 businesses. Feedback was overwhelmingly positive and attendees provided some great feedback and ideas which will influence new workshops now being planned for 2019.

HANDWASHING CAMPAIGN - RUFUS THE MESSY MONSTER

The safefood campaign ‘Rufus the Messy Monster’ aims to help teach children the importance of washing their hands, how handwashing can be fun and why it’s really important. The campaign material communicates that it is not just about getting children to wash their hands, it’s also about when to wash their hands. The best times are after using the toilet; after playing (inside or outside); after playing with pets, and before they eat. A short video has been created and is spearheading the campaign. This video includes a catchy sing-along nursery rhyme where the cheeky little monster, Rufus, teaches children to “wash their hands the only way that works”.

CHRISTMAS TURKEY COOKING CAMPAIGN

Last year’s Christmas Turkey Cooking campaign was a huge success, with a 53% increase in web traffic and more than 80,000 visitors to the safefood website between December 24th and 25th. The 2018 Christmas Turkey Cooking campaign aims to be even more effective with radio, digital and social media advertising along with a Facebook Messenger bot to support our customer services. This year the campaign is aimed at promoting our online turkey cooking calculator as well as a new Christmas information hub. Visit safefood.eu to find out more.

The calculator is also available as an App on Google Play and on the Apple App Store.
but one that’s notoriously difficult to pin down. Journalist Nick Hughes reports.

What exactly do we mean by food security? It’s a widely recognised concept – in fact, the average world supply of calories was over 2,800kcal per person per day in 1961 to 83g in 2013 and is almost certainly that the bountiful supply of cheap, plentiful supplies of cheap, uniform, largely safe food. And it’s been such a success that long-term food security can only be met its own nutritional needs. 

The evidence is stacking up that the bountiful supply of cheap, convenient food that many of us now take for granted has come at significant cost not only to our own health but to the health of the planet too. In 2009, a group of 28 internationally leading cause of death in all regions except Africa. Disease and type 2 diabetes linked to poor nutrition are now the leading cause of death worldwide that are overweight or obese with the result that citizens, particularly in the developed world, prefer to eat rather than what we need to sustain ourselves. Consider, for instance, the explosion in the consumption of meat, dairy and processed food products in recent decades that has produced a new form of malnutrition in the 2 billion people chronically from hunger in 2014 this is more to do with inequality although an estimated 805 million people were still suffering.

The productionist model of food supply that has gone largely unchallenged since WWII has been hugely successful in producing growing realisation among governments, academics and businesses that long-term food security can only be achieved if our food system is sustainable. This means that it must be both resilient and able to meet the needs of current and future generations.

The Food Chain comes in print and email format. To subscribe for free print copies (ROI and UK only), contact us on knowledgenetwork@safefood.eu. If you receive print copies via post and have changed address, please let us know. To receive email copies, join us on www.safefoodkn.eu

safefood is delighted to offer one lucky crossword winner a luxury hamper of gourmet food from Arcadia Delicatessen in Belfast.

Simply find the hidden word in the crossword, made up from the letters highlighted, and send the answer to knowledgenetwork@safefood.eu before 1st February 2019. This competition is open to Knowledge Network Members only on the island of Ireland only.

CONGRATULATIONS TO THE WINNER OF OUR LAST COMPETITION, ADRIAN BYRNE, ENVIRONMENTAL HEALTH SERVICE, DUBLIN CITY SOUTH EAST.

The answer to the previous crossword was BUTTER.

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THE FOOD CHAIN

We’d love to hear from you. Would you like us to feature your research or industry sector? What else would you like us to cover in the world of food safety? Send your article ideas, feedback and suggestions to knowledgenetwork@safefood.eu

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PERSONAL ANNOUNCEMENT

Have you got a personal announcement that you’d like to share in The Food Chain? We want to hear from you!

Get in touch via email: knowledgenetwork@safefood.eu