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Europe's Bioeconomy

The Business of Nature

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The Business of Nature

If you are like the average EU citizen, you probably haven't heard of the bioeconomy.

The European Commission itself admits: "The bioeconomy is not a well-known concept among European citizens, due to lack of information - or information that cannot be understood by the general public."

The commission has now decided that EU citizens need to know more about the bioeconomy. To do that, it is willing to spend up to €2 million on a project that should bring bioeconomy research and innovation closer to the public. The project, called Bloom, will establish five regional hubs to "create a space of knowledge exchange and debate".

Eurosceptics may dismiss it as a waste of taxpayers' money on propagating a buzzword, but others may applaud the effort to increase awareness of new environmental scientific ventures.

For the record, this is how the European Commission describes the bioeconomy: "The bioeconomy comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals and micro-organisms – to produce food, materials and energy."

And so whilst 'bioeconomy' itself may be a buzzword, the activities that comprise it are very real. Later this year, the commission will present a review of its bioeconomy strategy, so this third edition of EUobserver's Business in Europe magazine is very timely.

We take you along a tour of various sectors of the bioeconomy, including Europe's pig farmers and Finland's forest-based industries. You will also learn about the carbon footprint of death and whiskey-based fish food.

Happy reading!

Peter Teffer

Bioplastics industry risks disappointing consumer expectations

Photo: Kate Ter Haar

Europe is trying to kick its addiction to plastic, so businesses are on the hunt for alternatives. Bioplastics could replace 60 percent of plastic packaging on the market, but the switch is far from straightforward.

By David Burrows

In 2016, new research was presented at the 11th European Bioplastics Conference in Berlin. Around 1,700 German citizens were asked whether they had heard of the term 'bioplastics' before: 43 percent had and the rest hadn't. However, of the ones who did know the term, 84 percent of them didn't really have a clue what it meant.

"In the many years that I've spent writing about the niche in the plastics industry known as bioplastics, I've never ceased to be amazed [by] the profound ignorance that abounds about bioplastics," said Karen Laird, editor at Plastic News Europe.

The term bioplastics certainly doesn't help. 'Bio' conjures up feelings of 'natural' or 'environmentally friendly' whereas the rising tide of plastic waste has become a "planetary crisis". Research by Julia-Maria Blesin at the Hochschule Hannover has shown that when people hear the phrase bioplastics they tend to jump to certain conclusions: that it's completely plant-based, for instance, or that the raw materials are organically cultivated.

She believes that most consumers have "unrealistically high expectations in the sustainability of bioplastics".

For some companies, this ignorance is bliss because they can get away with greenwash.

Oxobiodegradable plastics are a case in point. Though sold on the basis that they will help to "protect the environment" because they biodegrade, the European Commission

thinks otherwise: "[They] have been found to offer no proven environmental advantage over conventional plastics, while their rapid fragmentation into microplastics cause concerns."

Work is now underway to restrict their use in the EU. But the problems don't end there.

SOMETIMES MORE HARMFUL THAN PLASTIC

Designers and brands are just as confused as their customers.

An investigation in the UK recently by FoodserviceFootprint.com found that the country's largest pub chains have been left bamboozled after switching from plastic to compostable straws. In some cases, the straws made from polylactic acid (PLA) – a plastic substitute derived from plants that will biodegrade within three months in a controlled composting environment – were ending up in landfills where they are actually more harmful than plastic.

Even the association representing the bioplastics sector admits that explaining its wares is tricky: "It's hard to communicate all pros and cons of the very different bioplastics in an appropriate way," suggests Hasso von Pogrell, managing director of European Bioplastics.

A clear definition would certainly help.

To date, the term bioplastics is loosely used to refer to plastics that are biobased, biodegradable, or both. Biobased means they are made at least in part from renewable materials derived from plants (like corn or cellulose) instead of fossil resources, according to the European Bioplastics website.

Some can also be biodegradable in industrial composting facilities (there is a European

Article continues on page 6

The tomatoes are organic - or 'bio' in German - but that does not mean that the packaging material is bioplastic.

Photo: European Commission

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standard, EN13432, for products that meet certain criteria for compostability), and can therefore be collected alongside food waste, for example.

But as von Pogrell explained at an event in Brussels organised by the European Policy Centre in February: "Biobased plastics are not necessarily biodegradable and compostable plastics are not necessarily biobased."

Some bioplastics can therefore be recycled with their plastic cousins (though they can lose some physical properties after several 'cycles'), but some can't and therefore end up contaminating collections.

How do you decipher which is which? With great difficulty.

EU RULES ON COMPOSTABLE PLASTICS

Brussels decided to step in. Proposed amendments to the packaging and packaging waste directive as well as the new plastics strategy published by the European Commission in January recognised the role bioplastics could play in helping "decrease our dependency on fossil fuels." Plastics' share of global oil consumption is expected to rise from six percent in 2014 to 20 percent by 2050, according to the Ellen MacArthur Foundation.

However, the commission said, "in the absence of clear labelling or marking for consumers, and without adequate waste collection and treatment, it could aggravate plastics leakage and create problems for mechanical recycling".

To avoid "false environmental claims" and reduce confusion, the commission will publish harmonised rules for labelling "compostable" or "biodegradable" plastics. A life cycle assessment will also be developed to ensure biobased plastics result in "genuine environmental benefits compared to the non-renewable alternatives".

The commission can't afford to hang about, either. As well its own anti-plastic legislative push, there's a pull from consumers looking for alternatives – the likes of Coca-Cola, Danone and Puma are all showing heightened interest in bioplastics - and Europe is where the action will be. Europe's share of global bioplastics production is forecast to jump from 18 percent to 25 percent between now and 2022; packaging will also remain the strongest segment.

This could create jobs, reduce carbon emissions, make use of waste and revive rural areas, according to the bioplastics industry.

But we shouldn't get too carried away. "If anyone thinks bioplastics will save the planet they are delusional," says one industry leader. Indeed, the most pressing issue is to reduce excessive and unnecessary use of plastics.

Consumers are looking for alternatives to plastic.

Photo: Arshad Pooloo

NEW BIOECONOMY STRATEGY WILL HAVE TO ADDRESS JOB LOSSES

The European Commission's 2012 bioeconomy strategy is in need of an update, with even the commission itself admitting the paper had weaknesses.

By Peter Teffer

Bulgaria had apparently not received word of the bad news. Neither had the European commissioner for agriculture, Phil Hogan.

Last February, Bulgaria opened a debate at a meeting of agriculture ministers with a paper stating that the bioeconomy employed around 22 million people in the EU. Hogan also cited that figure.

The bad news was that their information was outdated. The figure comes from the commission's bioeconomy strategy paper, published back in February 2012.

At the presentation of the strategy in Brussels, Maire Geoghegan-Quinn, who was the EU commissioner for research, innovation and science, at the time, said the bioeconomy was not simply a "niche area", it also promoted growth and jobs.

"With an annual turnover of around two trillion euro, and employing around 22 million people, the bioeconomy is already one of the Union's biggest and most important sectors. Its potential for the future is even greater," she said.

More recent estimates showed that the sector is indeed not a niche. However, the figures by the commission's in-house think tank, the Joint Research Centre, revealed the total number of bioeconomy jobs in the EU was never that high. Instead, it has been decreasing steadily.

In 2008, the bioeconomy employed 20.76 million Europeans. Over the next six years, that figure dropped consistently. By 2014, the most recent figure available, the number of bioeconomy jobs stood at 18.59 million.

While the overall job market in the EU shrunk during that period, the bioeconomy sector was hit proportionally harder. A large share of that is due to a relentless drop in agriculture jobs.

Between 2008 and 2014 over a million farm jobs evaporated. The wood production and wooden furniture sector also saw some 380,000 jobs lost.

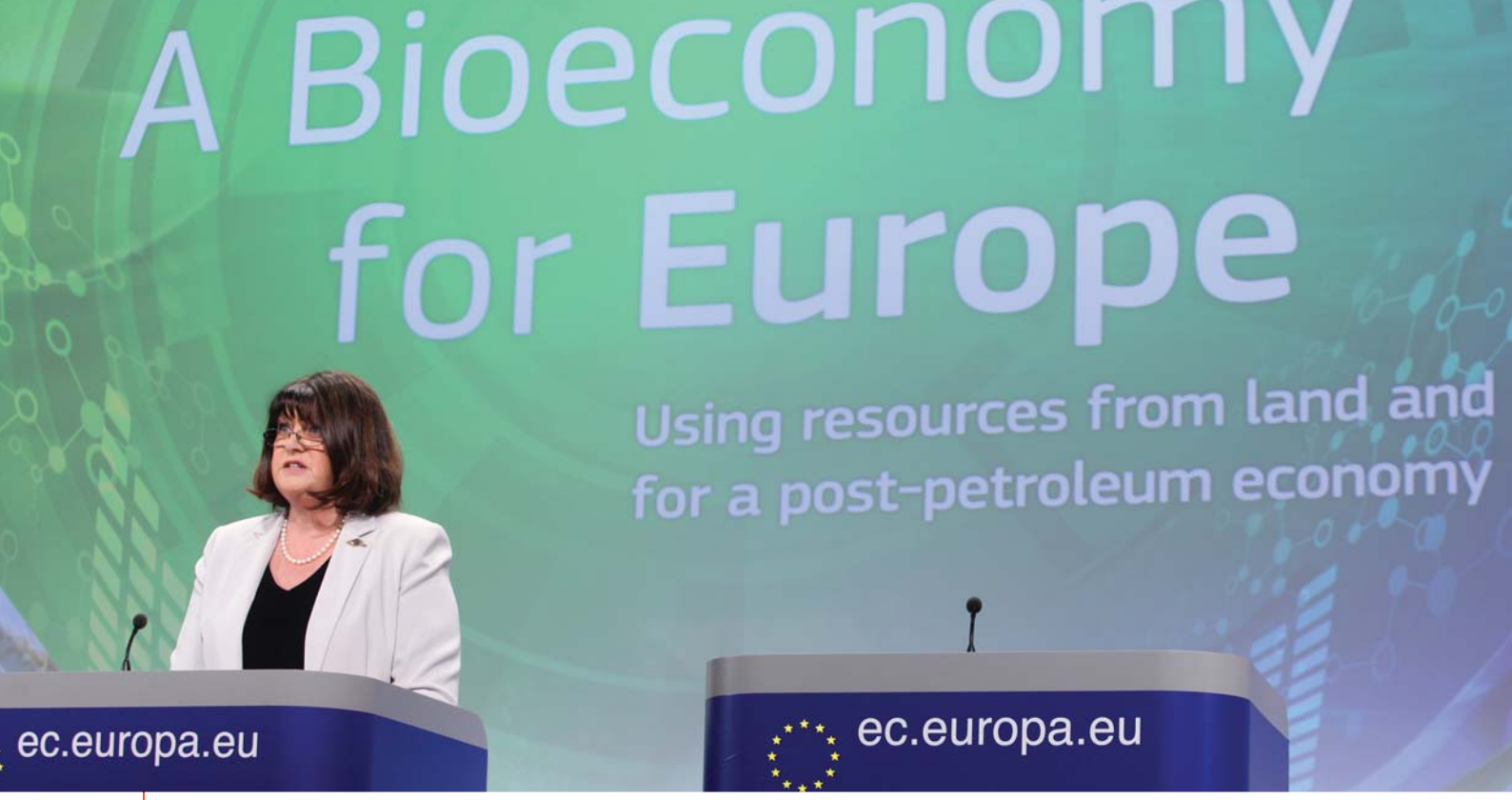
STRATEGY HAD 'WEAKNESSES'

The employment figure is not the only thing that is outdated in the 2012 bioeconomy strategy paper and accompanying action plan. The commission has planned to overhaul the entire strategy.

In November 2017, the commission published a review of its own strategy paper. Although it was worded diplomatically, it was nothing short of a scathing critique of the original paper, which had five goals.

Those five goals were: to ensure food security; manage natural resources sustainably; reduce dependence on fossil fuels; mitigate and adapt to climate change; and job creation.

The review said that the "intrinsic weaknesses" of the strategy and action plan was that goals were only generally described, and that the goals lacked "specific, measurable, attainable, relevant, and timely" targets.



Maire Geoghegan-Quinn, who was EU commissioner for research, innovation and science at the time, presented the commission's bio-economy strategy paper in February 2012.

Photo: European Commission

As a consequence, it was "difficult to monitor progress and fully assess, or evaluate, the extent to which the implementation of the actions contribute to the five strategic objectives".

"Also, the sheer number and diversity of (sub-) actions may have resulted in a sub-optimal focus and some overlap," it added.

A WESTERN EUROPEAN AFFAIR

Another critique was that the goals of the bioeconomy strategy were also the goals of many other EU policies.

"These policies and other factors such as the macro-economic context have had an important influence on addressing these objectives. It is, therefore, not possible in this review to quantify the direct contributions that the bioeconomy strategy and its action plan have made to help achieve these objectives."

The review did say that the strategy has helped increase awareness of the importance of the bioeconomy, but some caveats can be added there too.

The 2012 paper had called on EU member states to come forward with their own national bioeconomy strategies. The review found that those countries with national strategies were mainly those fifteen states that have been EU members since before 2004, while central and eastern EU countries "lag behind".

An east-west division can also be distinguished when looking at annual turnover figures of the bioeconomy sector. In 2014, 88 percent of the €2.2 trillion in turnover was made in the EU15. In part, that is because in eastern EU states the bioeconomy sector is mostly made up of agriculture jobs.

The agriculture and forestry sectors are still too often nothing more but a supplier of raw material, EU agriculture commissioner Hogan said at the February ministerial meeting.

"The bioeconomy has the potential to improve the living conditions of primary producers – our farmers and foresters - by creating additional outlets for higher value-added products as well as spurring innovation in the primary sector. However, in order to achieve this potential, primary producers need to play a more active role in the value creation of the bioeconomy supply chains," he said.

The commission has scheduled publication of the reviewed bioeconomy strategy for the third quarter of 2018.

The EU's bioeconomy in figures

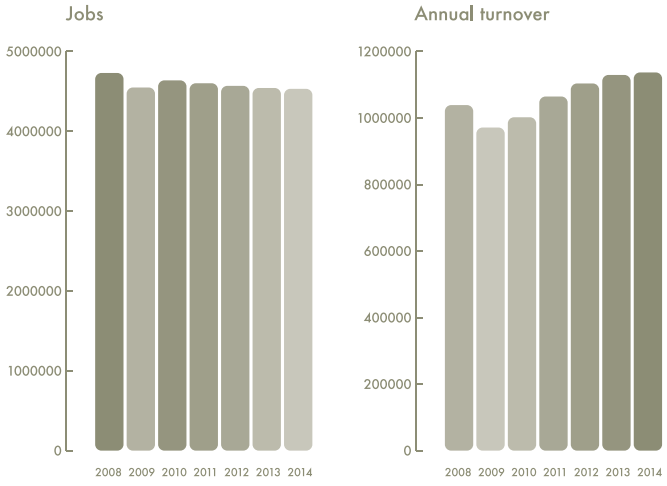
The following pages provide an overview of the development of jobs and annual turnover in ten subsectors of the bioeconomy, as defined by the European Commission's in-house think tank, the Joint Research Centre. More traditional sectors like agriculture and wood production have seen a reduction in jobs, which was not fully offset by new jobs in newer fields like bio-based chemicals.

Annual turnover figures are in millions of euros.

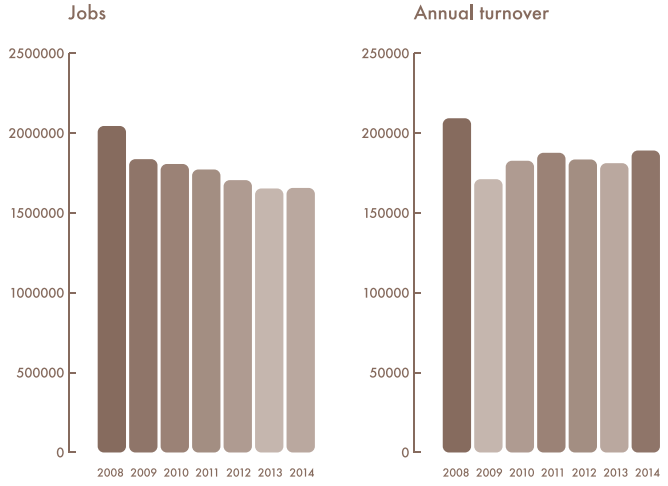
Source: Joint Research Centre

Agriculture

Food, beverage and tobacco industry



Wood products and furniture

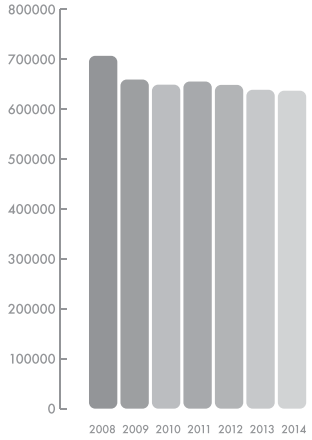


Bio-based textiles

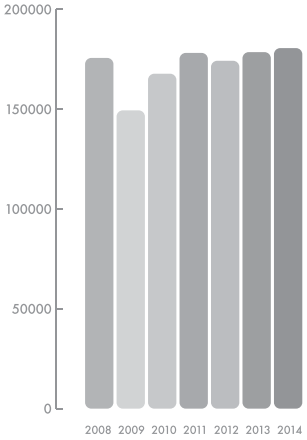
Infographics: Tobias Andreasen

Manufacture of paper and paper products

Jobs

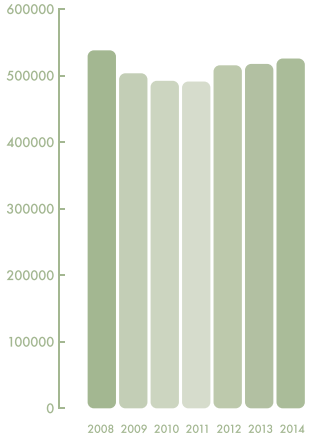


Annual turnover

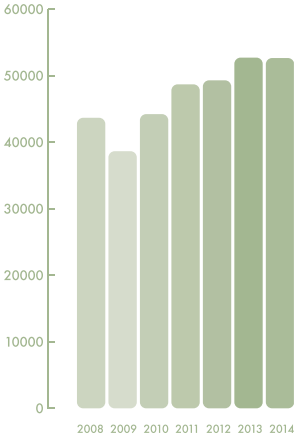


Forestry

Jobs

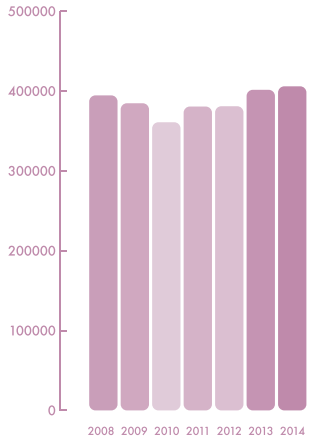


Annual turnover

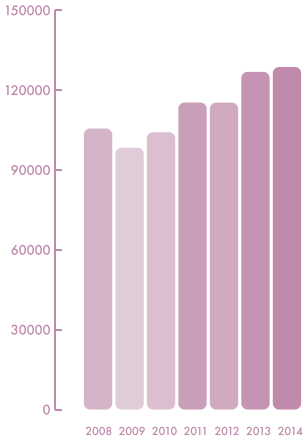


Bio-based chemicals, pharmaceuticals and plastics (excl. biofuels)

Jobs

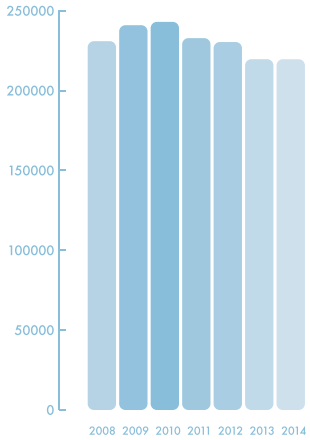


Annual turnover

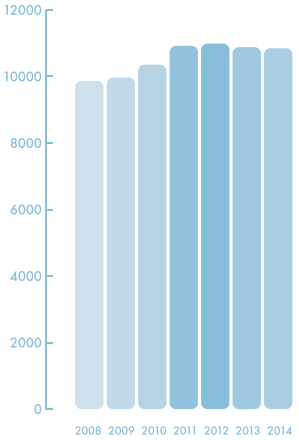


Fisheries

Jobs

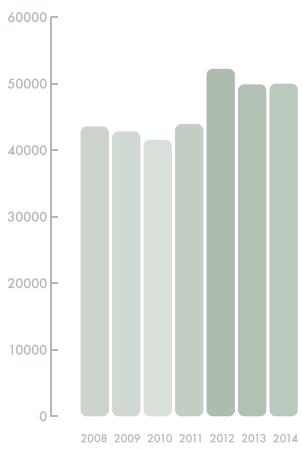


Annual turnover

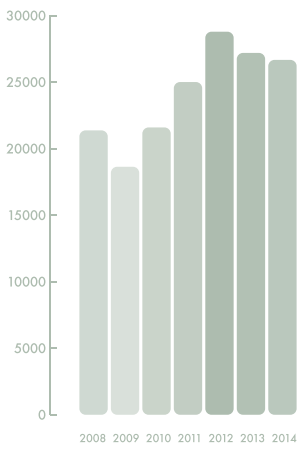


Biofuels

Jobs

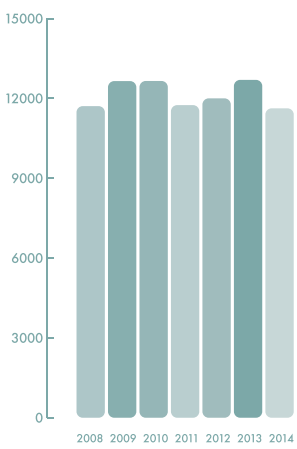


Annual turnover

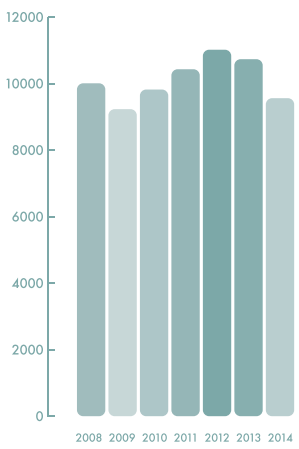


Bio-based electricity

Jobs

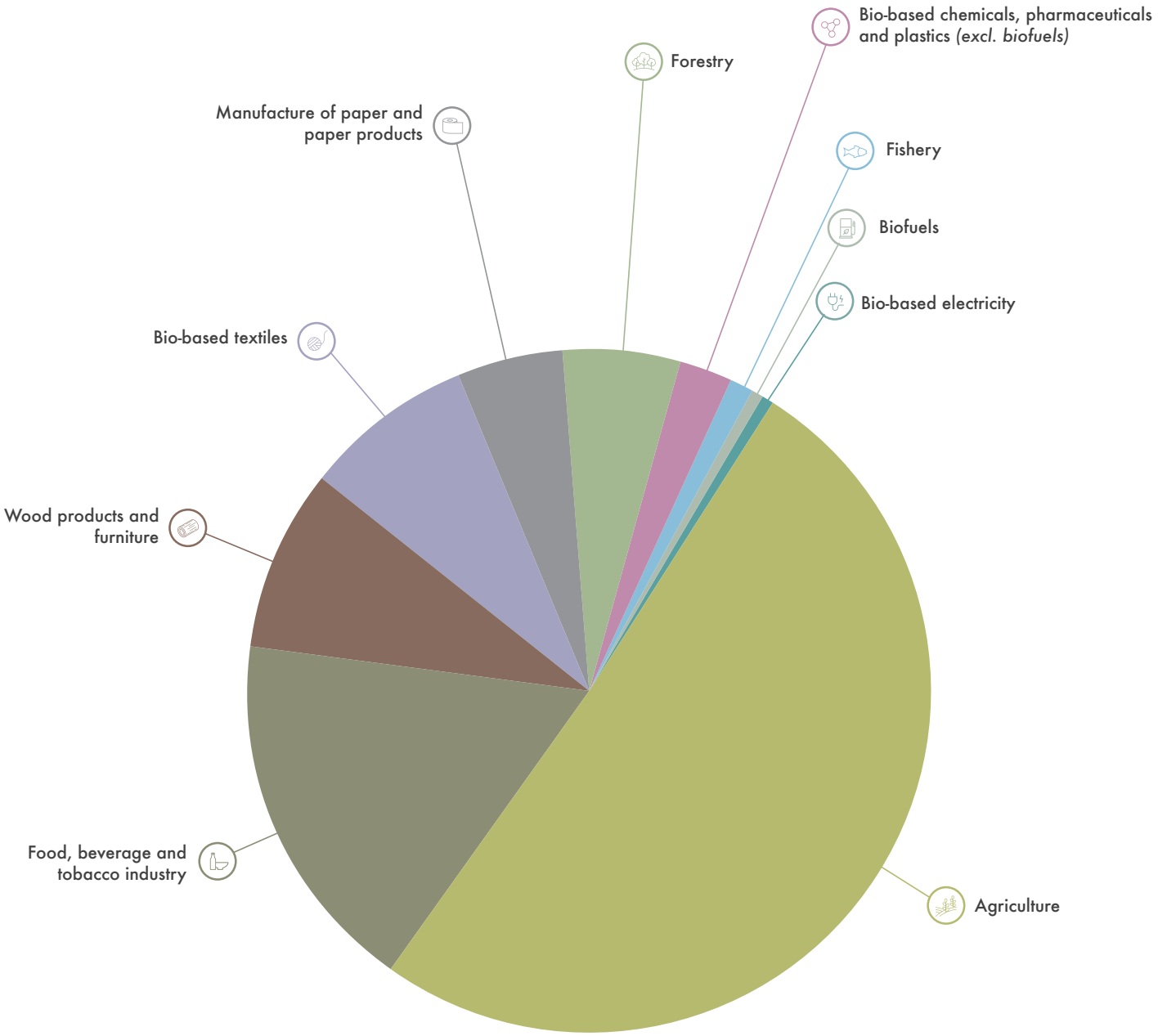


Annual turnover



Jobs in the bioeconomy in 2014

The European bioeconomy still employs most people in traditional sectors like agriculture. The more recent fields like bio-based chemicals, biofuels and bio-based electricity account for only a small slice of total employment.



BIO-BASED INDUSTRIES JOINT UNDERTAKING (BBI JU):

Helping Europe deliver sustainable everyday products for European citizens

The Bio-based Industries Joint Undertaking (BBI JU) is a public-private partnership between the European Union (EU) and the Bio-based Industries Consortium (BIC) with a €3.7 billion budget, established to fund projects that will address the need for sustainable industries and everyday consumer products in Europe. BBI JU is leveraging private investment from many industrial sectors using public funding from Horizon 2020. The programme has a key role in de-risking investments from the private sector to encourage research and innovation. This will help structure the bio-based sector for critical mass, essential for market uptake and consumer confidence.

BBI JU projects offer innovative solutions for renewable raw materials and waste. Clothes made of milk that would otherwise be wasted, dishwasher-safe, re-useable coffee cups made from coffee waste, bicycles made from wood carbon fibres and vehicle tyres made from dandelion rubber are just some of the examples showing the potential of bio-based industries in Europe. The development of these kind of products can pave the way for the creation of new jobs particularly in rural areas and substantially contribute to their development.

All EU citizens can benefit from a strong European bio-based industrial sector as it can significantly reduce Europe's dependency on fossil-based raw materials and products. This will help the EU to meet its climate change targets and lead to more sustainable and more environmental friendly socio-economic growth. Learning to use and re-use precious resources in a sustainable way is essential for our secure economic future.

BBI JU's projects are demonstrating the potential of new types of biomass. Innovative value chains within the bio-based sector can provide new outlets for agricultural products and by-products. In this way, sources of income for farmers and rural population can be increased and diversified which is totally aligned with the vision of thriving and resilient rural communities in Europe. At the same time, the development of a bio-based sector has the potential to create much-needed jobs in rural areas, and to contribute to more circular, climate-friendly and resource-efficient agriculture and forestry practices.

Access to new and improved bio-based everyday products that are comparable or superior to fossil-based ones mean better consumer choices for our citizens. As consumers start to become environmentally more aware, the demand for products from sustainable manufacturing processes, including bio-based products is also increasing. High performing advanced bio-based materials offer a broad range of properties and a combined outstanding performance and resistance. BBI JU is working to prove this can be done at commercially viable sustainable levels using home-grown European biomass. BBI JU projects are developing and testing new sustainable production processes and European industries are at the forefront of these advances

The bio-based economy is already contributing to Europe's prosperity but there is still a massive potential to be unlocked. BBI JU's research programme is paving the way to a more innovative resource-efficient and competitive society, boosting a massive beneficial impact on our future and bringing bio-based products to our lives.

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One man's whisky is another man's fish food

Photo: hj_west

As Scotland's whisky producers look for an alternative to feed their salmon with, one company offers omega-3 rich algae to do the trick.

By David Burrows

Two years ago, Douglas Martin's flat was littered with petri dishes, conical flasks and do-it-yourself incubators. He was experimenting with ways to encourage algae to grow on various types of waste. Progress was slow.

For one, it was harder to get hold of the waste than one might think (very few companies are happy to "pull their shorts down" for their waste to be examined, according to Martin). The set-up was also pretty basic.

Still, he managed to use industrial wastewater to grow omega-3 rich microalgae, which could be used to feed farmed fish or livestock. "It's amazing what you can do without your landlord knowing," he says.

Today, Martin sits proudly in the microbial cell laboratory at Heriot-Watt University in Edinburgh, Scotland, surrounded by state-of-the-art incubators and fermenters worth tens of thousands of euros. He is on the cusp of securing the investment he needs (£0.5m, €0.56m) to start pilot-scale trials with Diageo, the world's largest producer of spirits, as well as increasing staff at MiAlgae, the company he has set up, from three to five.

The plan is to take by-products from the whisky-making process, called pot ale, add particular strains of microalgae, other secret ingredients, and allow the algae to bloom inside a specially designed 50-litre fermenter. Could these microalgae of his actually turn out to be big business?

"This isn't a science project," he tells me on a visit

to the laboratory, part of IBioIC's FlexBio Centre at the university, earlier this month. "You can have the greenest technology in the world but it's no good if there's no money to be made [from it]."

THE BUSINESS SIDE OF WASTE

Martin may be trained as a geneticist and microbiologist but it quickly becomes clear that he is a businessman too. Everything the team does must be potentially scalable, which is not surprising given the waste at their disposal.

For every litre of whisky produced there are eight litres of pot ale (a statistic the whisky producers do not like to publicise). The majority of this 'co-product', as distillers call it, is spread on land, discharged at sea or treated as wastewater. Some are used for livestock feed but the energy demands are high and the returns are low.

Martin believes his approach is more commercially viable. The fermenters aren't cheap to build (the reason that some of the flasks are covered in tinfoil is because they're testing strains that grow well without light because a glass fermenter would be much pricier) or run, especially as he expands to 1,000 litre and eventually 30,000 litre capacities.

Having them on site at distilleries will cut transport costs and, as scale increases, costs will fall. He will also be selling into a market that is set to expand rapidly and supply customers that are hungry for alternatives to fish oil.

FISH FEED PROBLEM

The aquaculture sector in Scotland supports around 8,000 jobs and is worth £1.8bn to the economy. Salmon is the flagship species and Scotland's top food export: £600m in 2017, the highest ever and an increase of 35 percent against 2016. By 2030 the plan is to double the size of the country's aquaculture (there are similar projections for Europe's sector) and that means demand for feed will rocket too.

But there is a problem. Historically, the two most important ingredients in fish feed have been fishmeal and fish oil. Around a fifth (22 percent) of

FlexBio's Downstream Processing lab, including a 30 litre pilot scale fermenter

Photo: IBioIC

FlexBio Facility Manager Neil Renault, working within one of FlexBio's dedicated laminar flow workspaces

Photo: IBioIC

wild caught fish is currently used to feed farmed fish, but with 85 percent of global stocks either exploited or depleted there is a heavy price to pay for catching fish to feed fish (the sector has other headaches too, including sea lice, which are hitting production and threatening the industry's 'clean' image).

Fish oil prices are also extremely volatile, hitting a peak of $2,500 per tonne a couple of years ago and forcing many feed manufacturers to look even harder for alternatives. Grains and oilseeds, such as soybean and sunflower seeds, have been increasingly added to mixtures in the past couple of decades.

In Norway, for example, fish oil represented 24 percent of salmon feed in 1990 and vegetal raw materials 11 percent; by 2014 fish oil was down to nine percent whilst the plant-based portion had

rocketed to 74 percent. This swing has created a "fish oil problem", as the Financial Times put in an article in April 2017.

OMEGA-3

More specifically it's an omega-3 problem. These long-chain polyunsaturated fatty acids are an essential nutritional requirement for marine fish in particular. In the 1990s, rising levels of fish oil in feed led to farmed Atlantic salmon with high levels of omega-3, which went down well with health-conscious consumers.

But a 2016 study by experts at Stirling University in Scotland showed that levels of these fatty acids in Scottish farmed salmon have halved in the 10 years from 2005 to 2015. As a result, consumers would need to eat two portions rather than one in order to meet the fatty acid intakes recommended by health advisors.

Martin hopes his omega-3 rich algae could provide one solution, eventually at a price point that is both competitive and stable. Tests are ongoing – and much faster than in those early days. "We've done five years' worth of work in six months thanks to the equipment here," he says, with each experiment now taking just a week to deliver a result. The tests are small, but produce vast amounts of data so they can identify which strains grow well and under what conditions.

From 20 or so contenders they've now "whittled it down" and are gearing up for the pilot with Diageo – a company that sees water security and stewardship as one of its biggest risks and opportunities. Feeding fish with whisky waste could be a perfect example of circular economy thinking, says Martin, but there is scope to do much more with Scotland's waste.

The whisky sector produces 4.37 million tonnes of bio-based waste and by-products a year, whilst in aquaculture the figure is 190,000 tonnes. In beer – another key sector – it's over 56,000 tonnes. Making better use of all that 'waste' could result in economic benefits of over £800m, according to a study by consultants Ricardo Energy and Environment.

However, data on what's in all this industrial waste is lacking. "If we had more information about what's being discharged it would be easy to [make better use of it]," says Martin. You get the feeling he already has more plans for those algae of his.

FlexBio's microbial fermentation lab – Allows media optimisation of cells in plate, flask and fermenter up to 5 litre scale

Photo: IBioIC

Photo: David King

A sustainable death wish

No one can escape death. But choices over how one's body is disposed of could either lessen or increase your carbon footprint. Although still niche, companies are now exploring ways of making death more sustainable.

By Nikolaj Nielsen

Every year, millions of people in the EU are either buried or cremated in coffins made out of hardwood or particle board. It is a fate that awaits us all.

Trees are cut to make a coffin. Glue and other chemicals are used to make particle boards. Fuel is burnt to incinerate a body and formaldehyde to preserve it for display. Each step, and others, leaves behind a carbon footprint.

Although some efforts have been made to gauge the environmental impact on each method at the national level, cross-EU scientific assessments are lacking.

The EU has no rules on the cross-border trade in coffins. It means more eco-friendly coffins are required to go through regulatory certification hurdles per EU member state, a likely disincentive for some innovators seeking to expand their domestic businesses.

Amid the mix are relatively new companies and technologies aiming to provide what they describe as 'greener alternatives' to the more traditional burial methods.

For some, it means developing new materials and technologies to reduce a carbon footprint.

Among them is 'resomation', a technique where the body is dissolved in warm high pH bath water. The body turns into a fine white power, and the remaining liquid drained off. The process is legal in a number of US states but has yet to make any inroads in the EU.

Assessment, Keijzer sought to quantify the environmental impacts of Dutch burials and cremation.

She found, among other things, that the carbon footprint of funerals in the Netherlands is 97kg of CO2 equivalents per burial and 210kg of CO2 equivalents per cremation.

Taken as a whole, this represents a very small portion of a person's life footprint. Instead, she says issues like culture and other social norms of the ceremony itself may have an even greater impact in terms of cutting CO2 emissions.

A light and sturdy coffin cuts fuel transport costs

Photo: Chistann

In the Netherlands, however, talks are under way to legislate resomation as part of a broader array of options for those seeking more sustainable methods of disposing corpses.

"It is an actual topic here and we investigated the environmental aspects for the Netherlands," Elisabeth Keijzer, a sustainability researcher at TNO Netherlands, told EUobserver.

In one study published last year in the peer-reviewed International Journal of Life Cycle

"The only true sustainable funeral is a funeral without people being able to say goodbye and that is something we don't want, we want to have that goodbye moment," she says, noting that transport to and from a burial can be carbon intensive.

Reducing CO2 funeral emissions generally therefore focused elsewhere.

Cryomation is another technique, developed by a Swedish biologist, where the body is frozen solid

and then shattered into smaller pieces on a large metallic vibrating surface.

But such methods are unpalatable for some and a difficult sell.

For others, it simply means cutting the weight and all the associated fuel costs associated with getting a coffin to the grieving family and into the ground or furnace.

THE SUPPLY CHAIN

Dingco Geijtenbeek, founder of the company, Coffin in a Box, is one of them.

"If you want to supply coffins you have to basically adhere to a logistics model which exists in each country," says Geijtenbeek.

Member states use coffin depots scattered around the country to ensure supply and quick delivery. But the fuel used associated with keeping those depots stocked with heavy coffins has a cost.

It is a supply chain Geijtenbeek describes as hostile to newcomers given the trade is often dominated by bigger firms. A funeral service company may have its own coffin supplier branch, which in turn keeps the business within its grip.

To get around it, Geijtenbeek decided to make a coffin under 30kg that can be directly shipped to any address by standard mail like DHL or UPS.

"It is being delivered by the same guy who brings the Amazon packages to the house," he says. At under 30kg, the package requires less fuel for delivery.

The Coffin in a Box idea has caught the attention of others working in the circular economy, a cradle-to-cradle concept that the EU is attempting to kick start with new rules for waste and recycling.

Noble Environmental Technologies, a US company with a branch in the Netherlands, converts cellulose fibres from agricultural and urban waste into structural panels through a water pressure and heat technology known as ECOR.

"We don't use any additives or binders in order to make these panels, which can be used to replace particle boards or even wood in some instances," says Navied Tavakolly, a circular economy business developer at Noble Environmental Technologies.

Tavakolly describes the panels as fully biodegradable, recyclable, and which also contain nutrients for soil.

The basic panel is 2.5mm thick and three metres long. It can be used for most any structure but when shaped into a coffin, he says they are less expensive compared to particle board.

"When comparing it with hardboard, we still need to make a financial step, even though the product outperforms hardboard in technical properties. We are close."

'The only true sustainable funeral is a funeral without people being able to say goodbye...'

Photo: carolynabooth

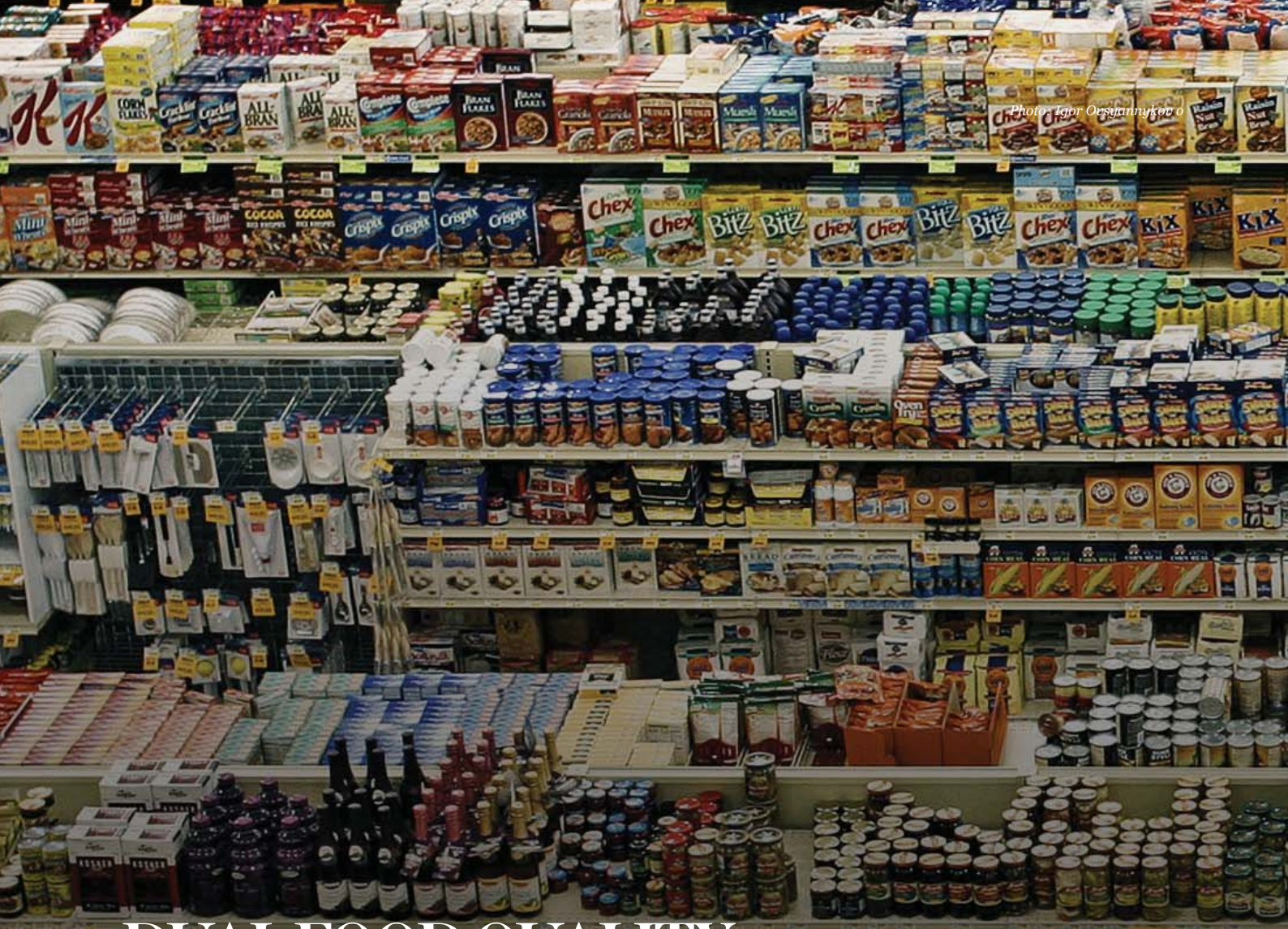


Photo: Igor Ovsyannykov

DUAL FOOD QUALITY: A recipe for east-west EU friction

The accusation by some eastern European leaders that food companies were shipping inferior products to the eastern part of the EU has put the European Commission in a bind, leading to a months-long struggle to find a response.

By Peter Teffer

Some political leaders from the EU's centre and east – notably from Bulgaria, Czech Republic, Hungary, and Slovakia – have complained that their consumers are being treated as second-rate citizens in what is supposed to be a single European market.

An often-cited example is that fish fingers of a specific brand contained less fish in Slovakia than in Austria. Others included chocolate spread, soft drinks, and even some non-food products like washing detergents.

The implied accusation – that food companies were discriminating against some EU citizens – put the European Commission in a tough spot last year. Internal commission documents, made public at the request of EUobserver, show that the

commission's various directorates-general had different thoughts about how to tackle the issue – or even the extent of the problem.

In March 2017, it was not yet a given that the commission would get involved at all. At a meeting in Brussels on 8 March 2017, EU commissioners were discussing the summit that would take place later that week. Justice commissioner Vera Jourova mentioned that the dual food quality issue was likely to come up at the summit, according to minutes of that meeting.

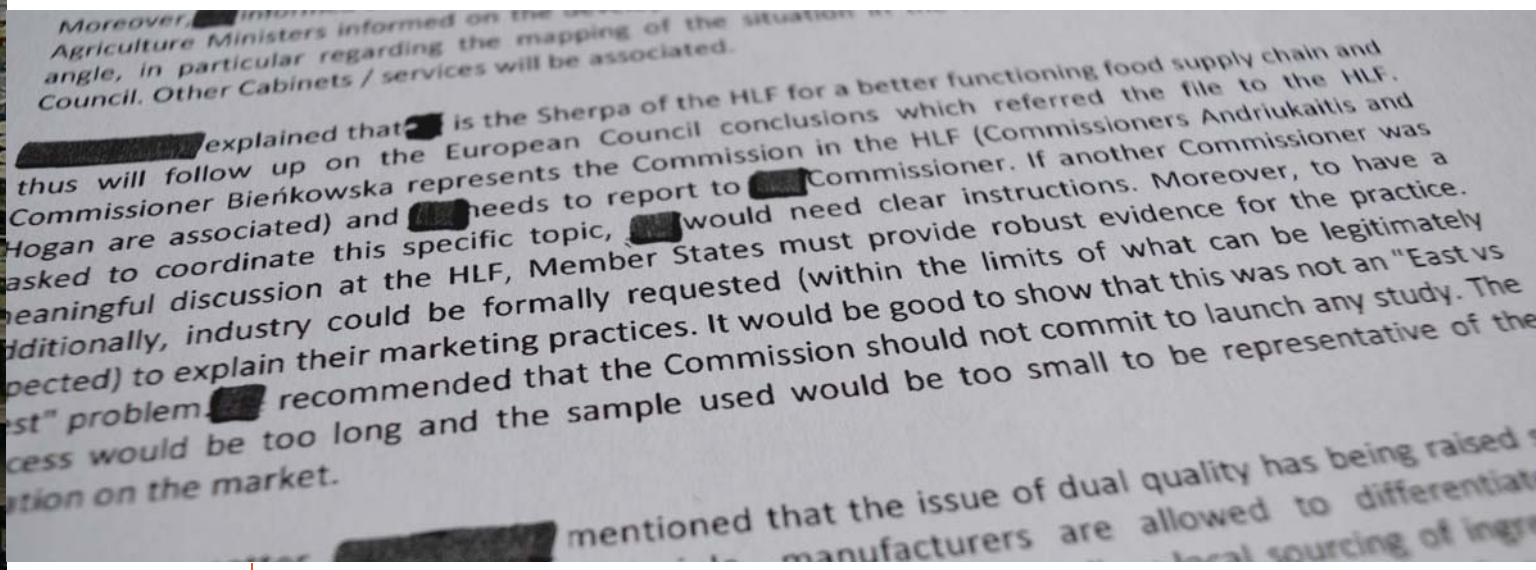
"She noted at the outset that this was not an issue relating to the safety of foodstuffs and other products, nor was it solely about their price and quality; it concerned the perception by consumers

meeting with participants from five directorates-general. Minutes from that meeting showed that at least one participant warned against the commission promising to launch any study into the issue.

"The process would be too long and the sample used would be too small to be representative of the situation on the market," the internal document said. The paper also noted, however, that it "would be good to show that this was not an 'East vs West' problem".

EAST VS WEST?

On 4 April 2017, there was a meeting between commission official Eduard Hulicius – a member



Redacted internal commission document released at the request of EUobserver

Photo: Peter Teffer

in the member states involved that they were not being treated equally," the minutes state.

NO IMPOSSIBLE PROMISES

Commission president Jean-Claude Juncker agreed with Jourova's remark that the commission should not make any promises it was unable to keep. "The president felt that, even though this problem was perceived as real in some member states, it did not fall within the competence of the commission," said the minutes, adding that the commission "was not in a position to deliver results".

Two weeks later, the commission held an in-house

of Jourova's cabinet – and the European Brands Association (AIM). The lobby group told Hulicius that differences in food products were normal, because of differing raw materials as well as varying tastes. AIM also noted that it was not "an East vs West issue", because while the share of fish in fish fingers in Slovakia (58 percent) was lower than in Austria, it was the same as in the Netherlands, Poland, and the UK.

Around the same time, member states replied to a commission questionnaire about dual food quality. Not only western European member states like Germany and France reported that they have never received complaints, but neither did Slovenia, Estonia, or Malta.

Former Slovak prime minister Robert Fico (l) convinced commission president Jean-Claude Juncker to see dual food quality as an EU-wide problem

Photo: European Commission

Nevertheless, in the summer of 2017, some of the EU member states that were suspicious of being treated differently, lobbied commission president Jean-Claude Juncker to view the issue as a pan-EU problem. Successfully.

After a meeting with then Slovak prime minister Robert Fico, at the end of July 2017, Juncker came out in defence of Slovak consumers, saying they have the right to have the same quality of products.

"I don't like the idea that there would be some kind of second-category citizens in Europe, so we are working on that," Juncker said.

WHAT DOES 'DUAL QUALITY' MEAN?

Since there was no appetite for new legislation, the commission opted to write a 'guidance note' – a non-binding paper – to explain how EU law can be used to tackle potential instances of unfair commercial practices. The paper came out in September 2017, but only after an initial draft was substantially amended.

The directorate-general for competition (DG COMP) said in a response to a draft version of the 'guidance note' that quality has different meanings to citizens. Taste is subjective: Some would say that more alcohol or sugar in a product means it has a higher quality, while others would argue the opposite. "DG COMP has not received evidence about the products for which there are complaints of 'dual-quality'. DG COMP therefore does not understand fully what is meant by 'dual quality' (…)," said the contribution of the anti-trust department.

The secretariat-general meanwhile took to rewriting whole parts of the draft, which had been prepared by the directorate-general for justice and consumers. A high-level civil servant of the secretariat-general wrote that the political context should be made more prominent – and in the final document, it was.

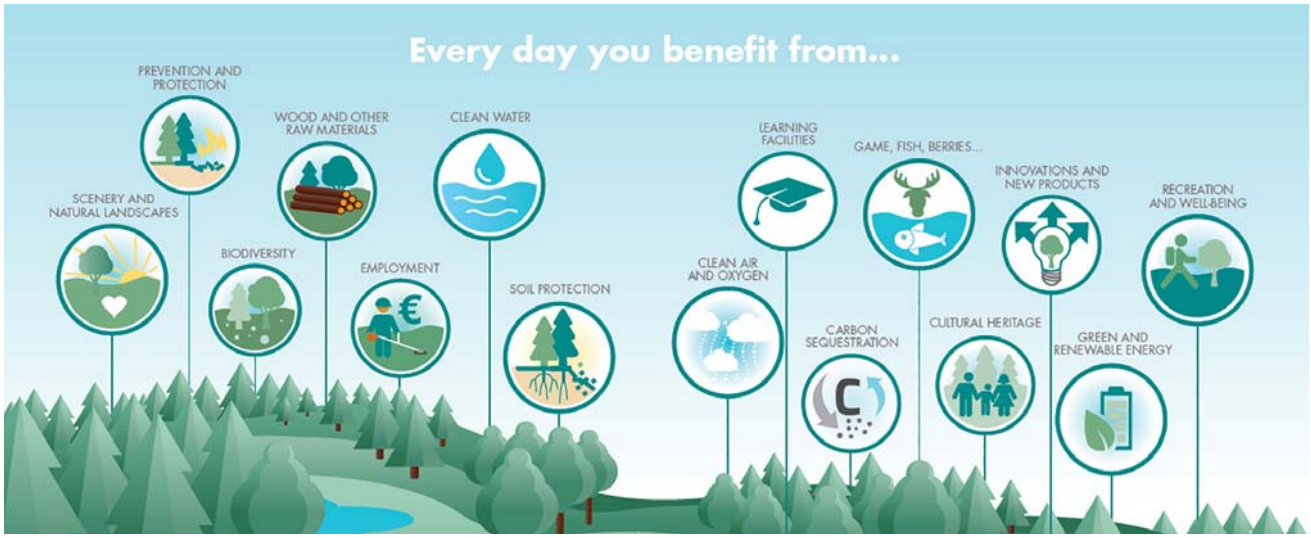
And despite earlier warnings not to commit to doing any study because it would take too long, this was in the end the chosen route. The Joint Research Centre (JRC) – the commission's in-house think tank – was tasked with investigating the extent of the dual-food quality phenomenon.

The document laying out the assignment said that the JRC should come up with a methodology, and analyse between 100 and 500 products. The interim report is scheduled for December 2018, and the final report for September 2019 – months after the European Parliament elections and only two months before Juncker's term is up.

Fish fingers of specific brands contain less fish in Slovakia than in Austria.

Photo: Superbass

GLOBAL CHALLENGES NEED A STRONG FOREST BIOECONOMY



The shift to a bioeconomy is of central importance towards fulfilling the climate change ambitions of the Paris Agreement as well as reaching the Sustainable Development Goals.

Forests cover more than 40 percent of the EU's land area. They provide the bioeconomy with renewable raw materials and other ecosystem services. In order to allow the forestry sector to fully contribute to Europe's targets in relation to employment, research and development, climate change and energy, education and social inclusion, the renewed EU Bioeconomy Strategy should:

IMPROVE POLICY COHERENCE

To deploy investments, the market must have a clear political direction. A long-term vision and commitment to developing the European bioeconomy are needed, including ambitious goals to be set and actions to be monitored over time.

RECOGNIZE THE TRIPLE CLIMATE BENEFITS FORESTS PROVIDE

Sustainably managed forests and wood use deliver a triple carbon effect in mitigating climate change through: (1) emissions removal, (2) carbon storage, and (3) carbon displacement, if wood is used to substitute for non-renewable and energy intensive materials.

VALUE INNOVATION AND TECHNOLOGY TRANSFERS

In order to allow for adequate conditions and the elaboration of best practices in forestry, the development of and research into silvicultural techniques need to be strengthened and technological developments and digitalization need to be supported.

SUPPORT NEW MARKETS

Policy should promote innovative pathways and new market opportunities for the use of wood. For example, improved product design rules could provide better opportunities for the recycling and reuse of forest materials.

AVOID RESTRICTIONS ON THE USE OF BIOMASS

Restrictions on biomass use could result in sub-optimal value cycles, limit innovation and penalize certain areas or industries over others.

ENCOMPASS THE ECOSYSTEM MANAGEMENT DIMENSION

Enhancing the market value of sustainable products can be achieved by promoting the sustainable management of forest ecosystems and the supply of raw materials. The ecosystem services and non-wood products which forestry provides to society should be better recognized and more fully valued.

IMPROVE THE COMPETITIVENESS OF FORESTRY

In developing the bioeconomy, the mobilization of woody biomass needs to be encouraged following the principles of Sustainable Forest Management. To that end, technological development, workforce education and the enhancement of silvicultural practices should be incentivized.

FOSTER AWARENESS AND PROMOTE COOPERATION

In moving towards a bioeconomy, full advantage must be taken of the synergies created by using wood and improving land management, by raising consumer awareness about the full bio-based value cycles and by promoting cooperation among experts and stakeholders.

Read more about how the European state forests boost the bioeconomy at: www.eustafor.eu/boostbioeconomy/

EUSTAFOR, the European State Forest Association, gathers together 33 State Forest Management Organizations from across Europe, which are often the largest forest managers and biomass suppliers in their Member States. State Forest Management Organizations provide biomass to a multitude of forest-based value cycles and, thanks to their scale, stability, reliability and openness to cooperation, they can catalyze the development of the bioeconomy. www.eustafor.eu

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MANAGING STATE FORESTS RESPONSIBLY

BIOECONOMY IS A WIN/WIN STRATEGY FOR FINLAND

"The big problem in the world today is a lack of resources and a lack of bio-diversity," says Finnish environment minister Kimmo Tiilikainen. His country plans to produce what the world needs the most.

By Lisbeth Kirk

Photo: EUobserver

Nokia is synonymous with mobile phones, but the world-famous Finnish company was in fact started as a paper mill, on the banks of the Nokianvirta river over 100 years ago - hence the name.

Paper is a typical bioeconomic based production, using water and wood as prime resources.

A Nokia phone was used when the world's first GSM call was made in 1991 and the company defined the mobile industry for over a decade.

Nokia's tax revenues paid for a large share of Finland's generous social model, but Nokia lost its dominance and was sold to Microsoft in 2014.

In that same year, Finland turned back to nature and launched a bioeconomy strategy to help create future jobs and wealth.

The bioeconomy comprises those parts of the economy that use renewable biological resources from land and sea – such as crops, forests, fish, animals and micro-organisms – to produce food, materials and energy.

"What are the big problems in the world? Lack of resources and lack of bio-diversity. So, when a country is dependent on exports, like Finland is – we have to think what kind of solutions we can offer to these big problems in the entire world," environment minister Kimmo Tiilikainen explains in an interview with EUobserver.

It is not all about making Finland better, he says. It is a win-win strategy.

"Our government wanted Finland to be a frontrunner in bioeconomy, circular economy and clean-tech solutions for two reasons. We can solve the huge environmental problems in the world if we can find these kinds of solutions, and it brings markets for our companies and sustainable employment," he said.

Kimmo Tiilikainen represents the Centre Party, a centrist, liberal and agrarian political party in Finland. He is also an organic farmer and forester himself.

Photo: Teemu Kuusimurto / Image bank of the Finnish Environmental Administration

The output of the Finnish bioeconomy currently exceeds €60bn, and more than 300,000 people are employed in the sector

Photo: EUobserver

GLOBAL SCARCITY OF NATURAL RESOURCES

In 2030, the world will need 50 percent more food, 45 percent more energy and 30 percent more water than today, the government estimated when Finland formulated the bioeconomy strategy.

The growing demand will result in a scarcity of natural resources and push their prices up. It was thought that availability of raw materials and the efficiency of their use would thus become a new competitive advantage for Finland.

The yearly output of the Finnish bioeconomy currently exceeds €60bn, and more than 300,000 people are employed in the sector. The bioeconomy strategy aims to create as many as 100,000 additional jobs in Finland by 2025.

"We are investing in research and innovation, creating new materials, new kinds of chemicals based on biomass and, of course, in the energy sector and transport, and new opportunities in water and waste," Tiilikainen said.

Tiilikainen represents the Centre Party, a centrist, liberal and agrarian political party in Finland. He is also an organic farmer and forester himself.

"We have also learnt a lot during the process and new aspects are being added. The concept and thinking of the circular economy must be adapted into the bioeconomy," he says.

"In the circular economy the target is to improve the material efficiency and avoid material consumption - reuse and recycle. It can create new types of business models and this kind of new economic thinking must be applied, no matter if the materials are renewable or non-renewable."

REPLACING PLASTIC WITH BIOMASS

"Most promising is the development of new bio-based material," Tiilikainen said, adding that "it will take five to ten years before they have full potential as commercial solutions, but research, development and innovative work has created new kinds of opportunities".

Plastic is one example.

Kimmo Tiilikainen

Photo: Sakari Piippo, Prime Minister's Office Finland

"We have big talk in the whole world - and in the EU as well - about the increasing consumption of plastic, and whether we have a chance to develop a more sustainable material to replace plastic. Developments of bio-based materials for packaging are promising," Tiilikainen said.

But the changes won't come with one single new invention, he suggests.

"It is a process. Our forest-based industries produce cardboard for liquids, milk or juice. The development has led to solutions where more and more of the cardboard can be made from biomass and where the layer of plastic becomes thinner and thinner all the time. Some day we will see packaging that is not using plastic at all. So it is not like that one day a totally new product comes in, but a continuous process where we replace the use of plastics with bio-material."

While the EU developed its first bioeconomy strategy in 2012, only a few member states have formulated a national strategy, with Germany first in 2011, followed by Finland (2014), Spain (2015), Italy (2016) and France (2017), according to a commission report from November 2017.

"Our strategy has been developed for Finland, so it can't be copied as such to other countries. But I think for sure that EU countries can copy what is relevant for them for their process. And it is not only within the EU, also developing countries can benefit from the know-how on for example sustainable forest management and water management."

RUSSIAN POTENTIAL

Finland's bioeconomy is expected to reduce the country's dependence on fossils, which could perhaps serve also as inspiration for Finland's large neighbour to the east, Russia, which is heavily dependent on exporting fossil fuels, gas and oil.

"I believe that it will take time but there is a great potential for them to turn from a fossil-based economy to a more bio-based economy and also to use the concept of the circular economy. They are very much interested in it. So that has huge potential because Russia is so rich in different resources – not only fossil ones," said Tiilikainen.

"I think that we need more cooperation in this field, between Finland and Russia, and between the whole EU and Russia in the future," he said.

The EU has close to 182m hectares of forests and other wooded land, corresponding to 43 percent of EU land area, which is slightly more than the land used for agriculture (some 41 percent).

Sweden accounted for 16.8 percent, Spain (15.2 percent) and Finland (12.7 percent) of the total wooded land in the EU.

The three countries were the only EU member states to record double-digit shares, according to 2016 figures from Eurostat, the statistical office of the EU.

Photo: The Humane League

No end in sight to Russia pork ban

Russia's ban on EU pork exports is costing farmers €1.4 billion a year, but reorienting sales to China might be a better bet than banking on WTO arbitration or a political detente to get the income flowing again.

By Andrew Rettman

With Russian leader Vladimir Putin securing six more years in office on 18 March, there appears to be no end in sight to the EU sanctions and Russia counter-sanctions that are costing the European pork industry €1.4 billion a year.

Russia's war in the Donbass region in eastern Ukraine has become central to the pork dispute in more ways than one. Russia first banned EU pork imports in 2014, shortly before it invaded Ukraine, on the grounds they posed a risk of bringing in African Swine Fever (ASF).

That followed a few outbreaks of the disease in Lithuania and Poland, even though there had already been about one million ASF-related pig deaths in Russia at the time.

When the World Trade Organisation (WTO) nixed Russia's veterinary ban in January last year,

Russia turned to the events surrounding Donbass. It reimposed the pork ban on national security grounds as a reaction to EU sanctions on its energy firms, arms exporters, and banks.

Its real motive was more likely an economic one. Up to half of Russian pig farms are expected to make a loss this year due to high feed costs, overcapacity, low domestic prices, and poor export opportunities. Another 500,000 tonnes of pork a year in extra capacity is scheduled to come online by 2020.

RUSSIAN PORK

China has shown little interest in Russian pork due to the ASF risk, and so Russia has turned to Donbass once again - this time as an export destination.

The Russia-occupied Ukrainian region, which is home to six million people, has become the principal foreign destination for Russian pork, consuming a significant majority of the 21,000 tonnes of pig meat and 50,000 tonnes of pig offal and by-products that Russia exported last year.

Russia used to import almost 500,000 tonnes of pork and other by-products from the EU, accounting for 18 percent of all European exports, before its bans kicked in.

There is no sign Putin plans to end his aggression in Donbass in his new term, or that the EU aims to end its economic sanctions when they come up for renewal in July. But if Russia were ever to lift its 'political ban' on EU pork, "there will be a threat to Russian pig production," Yulia Melano, the spokeswoman for Russian veterinary body, Rosselkhoznadzor, said in December.

The net cost of Putin's foreign and agricultural policy for EU pork producers amounts to €1.39 billion a year in lost sales, rising by 15 percent a year.

That is the sum the European Commission asked the WTO in January for permission to levy as compensation via new tariffs on other Russian imports, such as oil and gas.

Russia rejected it, setting the scene for a

Russian president Vladimir Putin visiting farmers in the Tver region

Photo: Kremlin.ru

A butcher in Moscow in November 2013, just before Russia banned pork imports from the EU

Photo: Michael Davis-burchat

WTO arbitration panel in Geneva, but even if the EU wins that, there is no guarantee Russia would take the ruling lying down. When Russia lost an arbitration against Ukraine on natural gas in Stockholm in February, it not only refused to pay the €2 billion award, it also stopped gas supplies to its neighbour.

The World Health Organisation (WHO) said in 2015 that processed meat, including many pork products, such as bacon, which is typically treated with chemicals to make it look pink, helped cause bowel cancer.

That did little harm to EU pig breeders, mostly in Germany, Spain, France, Poland, and Denmark, who still slaughtered 257 million pigs in 2016, two million more than before the WHO report. But during the first half of last year, EU farmers sent 2.7 million fewer pigs to the abbatoir than in the same period in 2016 - a warning sign for the sector.

Some EU states are banking on an end to Russia sanctions, with Ireland, for one, sending its trade minister and 17 businessmen to a trade exhibition, called Agrofarm, in Moscow in February. "Sanctions are not there forever" and there are "huge opportunities here [in Russia] for Irish companies", Irish trade minister Pat Breen said at the time.

But Ireland, as well as other EU states, such as Finland, are also looking to reorient lost pork and other food sales from Russia to further afield in the long term.

Breen called the opening up of the Iranian market after decades of sanctions another "huge" opportunity. Finnish pork seller Atria launched its products in Chinese shops last summer and aims to sell 5,000 tonnes in its first year of trading with the world's biggest pork import market, worth 1.2 million tonnes a year overall.

The firm's CEO, Juha Grohn, said competition was "enormous", but told Chinese news agency Xinhua last month that EU firms can offer the increasingly picky Chinese consumers something that many Russian ones cannot - guaranteed quality. "What we can offer is transparency and traceability. We can follow production from farm to the last step of delivery to China," he said.

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