The bioeconomy: What next for Europe?

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When it was launched in 2012, the EU’s bioeconomy strategy was primarily focused on the production of fuels for transport. That policy has since been reversed to focus on bio-based chemicals and materials like textiles and bioplastics.

In this special report, Euractiv looks at the bioeconomy’s priorities for the next decades and efforts to develop multi-purpose biorefineries that can take on several feedstocks depending on their availability.
Scaling up: The bioeconomy’s 30-year challenge

By Frédéric Simon | Euractiv.com

Bi-based chemicals have the potential to partly replace fossil fuels in applications like fertilisers and plastics, but the transition will take decades and there are still big challenges ahead to scale up production without harming the environment, scientists say.

The bioeconomy in Europe has come of age since the European Commission first launched its bio-based industry joint undertaking more than 10 years ago.

“If you look how we started out since 2012 ... we actually moved from a predominantly bio-based fuels focus on bioeconomy towards more higher-value products such as polymers, chemicals, and bioactive compounds,” says Kevin O'Connor, professor of applied microbiology and biotechnology at University College, Dublin.

At the time, many thought the bioeconomy was about replacing fossil with bio-based products one-for-one, O'Connor told a recent stakeholder forum of the EU’s Circular Bio-based Europe Joint Undertaking (CBE JU).

“But it’s not,” O’Connor told participants. “It’s about looking at your resources, keeping them at the highest value possible and minimising the use of that resource in areas where you think you’re going to generate waste”.

“So it’s very much about prevention and minimisation,” he said at the Brussels event, on 6 December.

The EU’s ill-fated experience with biofuels has indeed dealt the EU’s bioeconomy strategy a near-fatal blow.

Back in 2007, EU policymakers adopted targets to ramp up biofuels in transport only to make a U-turn eight years later when they realised increased biofuel production from dedicated crops like rapeseed or corn was diverting land away from food, causing more harm than good to the environment.

Now, the EU is emphasising second-generation biofuels which have a lower environmental footprint because they come as a by-product of forestry or agriculture.

Producing biofuels that way is “okay in my view,” O’Connor said. “But don’t make biofuels your primary product, otherwise you’re going to encounter environmental issues when going up to scale,” he told Euractiv in an interview.

Bioresources from the oceans

O’Connor sits on the scientific committee of the CBE JU, which has €2 billion in funding from the EU’s research and innovation programme, Horizon Europe. At a stakeholder forum in Brussels on 6 December, CBE JU members sat down to devise what could be their research agenda up to 2050.

For them, the end objectives remain the same – replacing petroleum-based materials with bio-based ones. However, the approach is different this time, focusing on marine resources and municipal waste rather than dedicated crops for fuel production.

According to scientists, 80% of the biodiversity and 50% of primary biomass is coming from marine ecosystems. “So we need to start looking more closely to the biological resources coming from there,” said Fabio Fava, the vice-chair of a group representing EU member states in the CBE JU.

For example, mangroves and salt marches from coastal areas can be “interesting feedstocks” to produce bio-based chemicals for all kinds of applications, said Fava, who is a Professor at the University of Bologna in Italy.

Together with green algae and sea grasses, “they can be interesting resources from which we can prepare chemical materials,” he said at the forum.

One of the key applications researchers are looking into is to produce biobased plastics that can replace petroleum products, Fava said. “And then we need to deal with biodegradation because we don’t only need biobased but biodegradable plastics. And here, we need to assess more efficiently under which conditions this is taking place.”

But phasing out plastics will require more than biobased solutions, O’Connor pointed out, saying prevention and minimisation will also be key.

“That way, we can envisage replacing fossil plastics with bio-based alternatives – for example by using bio-based biodegradable for plastics such as those coming in contact with food,” he said. And for other applications like plastic bottles, recycling is going to be a more obvious choice, he adds, emphasising the need to reduce plastic consumption in the first place.

The key though is to avoid repeating past mistakes made with biofuels and place the emphasis on feedstocks that have a low environmental footprint.

“We don’t want to do the same mistakes in the soil that we have done in the land. We don’t want to extract and apply a linear thinking model,” said Helena Vieira, Chair of CBE JU Scientific Committee and ERA Chair Holder at the University of Aveiro in Portugal.

That, for example, involves tapping into the 140 million tonnes of municipal waste produced every year in Europe.

“We are only using 40% of it, mostly to produce compost, biogas and digestate,” Fava remarked. “I think we need to be more ambitious here – we need to produce more chemical material from that feedstock,” notably thanks to multi-purpose biorefineries that can take different feedstocks coming from agriculture, forestry or municipal waste.

Scaling up – the next step

The big challenge, at the end of the day, is to scale up production in a way that is economically profitable – without harming the environment.

Europe currently has “a huge variety of small-scale products” that haven’t been “upscaled to a full-blown bioeconomy yet,” said Greet Maenhout, from the European Commission’s joint research centre.

And to upscale production, standards will be needed at the EU level to ensure the end products are consistent. “If we think of sustainability criteria, this is not so trivial,” she said.

O’Connor agrees with this, saying the next step for research is to develop multi-feedstock biorefineries. However, this flexibility in taking different kinds of feedstocks is “a huge challenge” that requires a lot of research, he pointed out.

“What we currently have is individual bio-refineries taking single feedstocks,” O’Connor told Euractiv. “The next phase of development will be bio-refineries that can take multiple feedstocks, so they can hedge economically and take a certain bio-based resource that’s available for example from Spring until Autumn and other feedstocks in winter.”

“We need more biorefinery and scale-up demonstration sites across Europe to help scale and accelerate the transition away from fossil and towards biobased products,” he said.
Business leader: ‘Europe lacks a clear policy framework for bio-based products’

By Dave Keating | Euractiv.com

Europe needs stronger policies for bio-based products in order to make it clear that virgin fossil products do not compete in the same category, Rob Beekers argues in an interview with Euractiv.

Rob Beekers is Business Development Director at Cargill, an American global food corporation. He is chair of the Bio-Based Industries Consortium and Chair of board for the Circular Bio-Based Europe Joint Undertaking (CBE JU).

He spoke to Dave Keating for Euractiv.

Biorefineries in Europe are struggling to scale up. What is hindering that right now?

That depends a little bit on where the product of concern is based regarding its readiness level. For products ready at commercial scale, where there are maybe one or two biorefineries already existing, the question is, why aren’t more investments in larger things happening?

I think the most important factor that explains why this, even across the world, may not go as fast as we would like is that there’s still quite some risk in making investments in biomaterials, and there’s also a lot of capital needed.

So, when you deal with companies like Cargill, petrochemical companies, or a lot of larger enterprises, they have options where to invest in. It’s about a lack of attractiveness of such investments that is hindering larger-scale accelerations to happen.

Whether these happen in Europe or somewhere else depends on the attractiveness of Europe as a site for those investments. And there, when we talk about the availability and cost of feedstock and energy, that may limit the acceleration of those investments in Europe. Natural gas in the US is significantly cheaper when compared to Europe.

When you look at new technologies, products that are out of the lab but don’t have commercial scale yet, like the flagships in the Circular Bio-Based Europe Joint Undertaking, I think in addition to the challenges I just mentioned for established products, you also have challenges that you need to demonstrate that your product works at commercial scale. That’s pretty expensive because you need to go out of the lab, you may even need to go out of the lab and into pilot facility. Is that pilot facility there? So we could scale it up by having more access to pilot infrastructure in Europe where companies can go.

There’s also the access to capital. We’ve had many more start-ups approaching us today than two or three years ago when the cost of capital was much lower. When you have a new product, there’s a lot of complexity in getting the product approval and very high costs. Permits to build plants, comparisons to demonstrate feasibility, lifecycle assessments, these are things that can be very time-consuming and very costly.

The costs are getting too high before you get any income. So, I think scaling up is really key, but it turns out to be difficult in the current environment.

Is it important that bio-based products have a level playing field with other products?

You often hear companies ask, why isn’t there a level playing field? Personally, I don’t like the phrase level playing field when it comes to comparing products for the linear economy and the circular economy.

A level playing field should be created for products within the circular economy, so the moment you have renewable products that can be used for food for feed or for materials, is there a level playing field between those areas? Well, if you look at the fuel space, there are mandates happening there that have accelerated the take-up of bio-based products. Such mandates have to be accelerated.

But to compare it with virgin fossil, I’m not sure we should try to strive for a level playing field because actually, if you really look at a true circular economy, you can’t say that a virgin-fossil-fuel-derived product has a right to play on that playing field.

To make that comparison and to require that lifecycle assessments demonstrate that the product is better than virgin fossil gives the impression that continuing with virgin fossil is an option. I think that’s something that we need to be more clear about.

What are some of the best practice examples from biorefineries in Europe?

Greenfields are good, but the more you’re greeningfield, the more risky it is and therefore you don’t see so many greenfields. So, it’s best to look at existing clusters where you may have utilities, where there might be synergies between food, feed, chemicals and fuels. You have that in areas like North Sea ports – look at Antwerp, Ghent and Vlissingen.

You have start-ups there with biorefineries for food, fuel refineries and petro refineries. There’s I think two flagships of CBE that are located in that hub, and not for nothing, because there’s synergies. You have the Lanzatech one with CO2 from Tata steel, you have a flagship project that is looking at a sidestream from a food biorefinery.

In those clusters the chance for success are higher, in particular when you get in those clusters investments in renewable energy infrastructure. Renewable energy will be a key to success for biorefineries. You need access to green electricity, green hydrogen.

Europe should make use of those clusters, and it should be earmarked which clusters are the most promising and those should be invested. Not just for the benefit of the petrochemical companies that are there, but also the biorefineries.

If you look at the US, at the cluster in Houston you see a huge...
amount of investment in renewable energy, renewable hydrogen. Will biorefineries benefit from that? Probably not, because there’s not very many. So how can we make the biorefineries become more competitive? It depends on the infrastructure that’s around those biorefineries.

I think Europe has a really good footprint for that and we should leverage that.

**What does the sector most need from EU policymakers right now?**

We had a few workshops with the Bioindustries Consortium in the Spring and Summer bringing participants from the Commission and industry together. They were on various topics but one of the recurring themes in the feedback from people in these workshops was that Europe lacks a clear policy framework for bio-based products.

Without a policy framework you’ll see movement on the bioeconomy but not a transformation. It will remain in specialties formulations. If you look at the flagships of circular bio-based projects, I think from the 16 flagships we have now there’s 13 on specialties and formulations. That’s logical because these are products that are sold already at higher prices on the market, so you go with a product that’s a bit more expensive in terms of costs. Then in overall terms, percentage-wise, the increase might be less and also the market might be more willing more to pay for that, like with cosmetics for example.

At the moment we’re talking about making more renewable and bio-based products the norm. That means you cannot just talk about specialties and formulations, you have to talk about the main building blocks that materials are made from today.

We need to continue with specialties, and flagships have been successful in that, but we’ve not succeeded in really touching the backbone of the products we use today. How are we going to phase out virgin fossil? Of course, we need to reduce, reuse and recycle. But for the piece where you cannot have that material go back you will need virgin material, and that virgin should be renewable. That means talking about products that need to be produced in the millions of tonnes, not in the thousands of tonnes. That is what I think is really needed in the policy framework.

We also need a recognition that all sources of renewable carbon need to be appreciated in Europe. Europe focuses a lot on recycling, which is key. But we also need to look at bio-based carbon, which is not really valorised so much in Europe compared to Asia and the US.

Of course, there’s CO2 which you can use as a building block to make materials, but you need a lot of hydrogen generally for that. We will need all of those for a transformation and this also means that if you look at bio-based materials, it’s not just waste.

That’s also what you hear in Europe, that you can use materials as long as you take it from a side stream or waste. That will also be needed but it will not be sufficient. There are sometimes quality concerns about waste. Does it have the size to become a real substitute for products used today from the chemical industry?

As a last point, of course it is very important for a sustainable planet that the European Green Deal will do this. But Europe should also look at it as an economic opportunity. I think one of the reasons this progress on biomanufacturing is happening right now in the US, with all the funding coming there, is that there this is seen as an economic development. They don’t want to lose out to Asia.

In Europe, we need to consider the bio-based sector as an economic sector for sustainable growth and not only as a sector that will help to meet climate change targets. Those targets are key, but we need to still also have industries that we work in and make a living from.

(Image to the right: Kouvola, Finland – 15 September 2020: Upm Kymi factory in Kuusankoski. Shutterstock / ElenaNoeva)
Funding the bioeconomy: Calming investors’ fears

By Dave Keating | Euractiv.com

The URBIOFIN biorefinery where a dedicated team converts urban solid waste into versatile feedstock. [Photo credit: ©URBIOFIN]

Bank and financial institutions see investment in scaling up bio-based technologies as “non-bankable” despite these initiatives offering clear paths to reaching government-set environment and climate targets.

Europe has long struggled with scaling its nascent technologies up into successful businesses, particularly when compared with the United States.

This has been particularly true for the bioeconomy, an advancing area not well understood by investors. These types of innovations often needs large, costly facilities to demonstrate their effectiveness.

“The biggest challenge is that in a very large number of cases the companies that need to build their facility are building the first of its kind,” explained Joško Bobanović from Sofinnova Partners, the oldest venture capital firm in Europe.

“No body’s done it before at that scale, so there’s an element of risk.”

Bobanović spoke last week in Brussels at an annual stakeholders meeting for the Circular Bio-based Europe Joint Undertaking (CBE JU), a €2 billion partnership between the European Union and the Bio-based Industries Consortium that funds projects advancing competitive circular bio-based industries in Europe.

While venture capitalists might be ready to jump at that risk scenario, banks are not.

“For venture capital firms that’s a low risk compared to the risk we have taken in trying to figure out how to engineer a chemical, for instance, and proving it in a pilot or demo facility. But when you talk to a commercial bank, they run for the hills,” Bobanović said.

The bioeconomy is a relatively new term, encompassing a wide range of goods, services and energy involving the use of biotechnology and biomass such as crops, forest residues or biowaste.

Alex Michine, founder and CEO of enzyme company MetGen, who worked in venture capital investment before founding his company, told the Brussels meeting that finding investors with a deep understanding of the bioeconomy sector can be hard to come by.

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“We should jointly find more investors behind these products and technologies who have little knowledge of the business or finance world.”

“I enjoy every second of working with these small companies because there’s a huge challenge when the companies are a spin-off from a university, with the scientist who thinks that’s my baby, it works, I like it, but I have no clue what to do next. They have no legal support, no sales and marketing teams, no idea how to scale it up from the idea in the university to the outside world,” he said.

Filippo Giancarlo Martinelli, European ambassador at the Irish Bioeconomy Foundation and Coordinator of the BioeconomyVentures project, said the process should be tailored to the individual entrepreneur.

“Not every company has to go from lab to biorefinery. Maybe you’re not the right people to run a chemical plant. Maybe you should sell your technology to the Novozymes of this world,” he said.

Enabling innovators to know where to get capital, and financiers to understand the bioeconomy can make them more comfortable with the risks involved.

“Different stages have very different challenges,” explained Martinelli.

“At the early pre-seed stage, investment is made in people. Then you have a shift into intellectual property (IP). Then you realise you cannot speak with banks because you don’t have tangible assets: You can’t get loans if you don’t have assets to secure it. You have IP, but banks don’t understand that.”

For that, public assistance is needed because governments better understand the importance of the bioeconomy in meeting environment and climate targets.

Michine agreed, noting that there is a €10 billion bioeconomy financing instrument from the European Investment Bank.

“But the big problem is that is that EIB fund isn’t for start-ups,” conceded Misiga, who works at the Commission’s research and innovation department. “That’s why we initiated the European Circular Bioeconomy Fund, which has €300 million for SMEs.”

However, he says the Commission still has difficulties finding candidates for the fund. “Half of the capital comes from public sources, so they can take enormous risk. We’re asking how can we help companies in this stage where even venture capitalists are not courageous enough to go into that.”

So, who isn’t being courageous here – the public sector, private financiers, or both?

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Misiga insisted that governments are being more courageous than banks and venture capital funds, because they provide project development assistance to academics
who don't know what to do with their innovation.

However, public institutions have a responsibility to taxpayers and can't throw money at innovations that haven't demonstrated market potential, he adds.

"If the market for the products are there, with downstream users for bio-based products, I believe the venture capital is there to invest with no problem," Misiga said. "That's the key. If there are no future clients there, this is not a viable innovation."

"The EIB provides debt, equity, guarantees – all kinds of instruments – but the majority of instruments really do not reach small companies simply because they don't have capacity to provide all the information for the EIB to provide an investment," Misiga continued. "So we need both VC funds and public funds in Europe, and we need to blend them."

According to Misiga, there is also a need for "a new generation of policy" to give signals to the market, noting that "targets are important" in this regard.

However, he also cautioned against overreliance on regulation to make the bioeconomy thrive, saying: "We don't have very good experience with centrally planned economies."

From the venture capitalist perspective, Bobanović also argued against overreliance on policy to stimulate investment. "We have a tendency in Europe to rely on public financing to allow things to develop. But ultimately in a mature business there is private capital that goes into projects that make sense. So why don't we think about ways of enticing commercial lenders to go into these types of projects, for example by providing a guarantee, like the US did with solar?"

Misiga said the Commission was looking into ways of providing more certainty for these investments, including a labelling scheme to distinguish more clearly between bio-based and fossil-based products.

The EU official also suggested that banks may still be reeling from the EU’s sorry experience with crop-based biofuels, which turned out to be less sustainable than thought and tarnished the reputation of the bioeconomy.

“They may be afraid of reputation damage if they invest in such a thing. The truth is there is no sustainable sourcing criteria for most biomass. There is a need to develop sustainability criteria for biomass."

Bobanović suggested developing a consumer-friendly sustainability scale as the EU did with electronics. "On an appliance we have grades ABCDE. We need that for bio."

How long it will take, however, is another story, Bobanović added. "It might take 10-15 years."

Fifteen or twenty years will be needed “at the very least” to phase out fossil-based fertilisers and switch to bio-based solutions, says Kevin O’Connor. But it can be done with the right incentives, he argues in an interview.

Kevin O’Connor is professor of applied microbiology and biotechnology at University College, Dublin, and director of Ireland’s national bioeconomy research centre (BOrbic). He is also a member of the scientific committee of the EU’s Circular Bio-based Europe Joint Undertaking (CBE JU).

O’Connor spoke to Euractiv’s Frédéric Simon on the sidelines of the CBE JU stakeholder forum 2023 on 6 December. The CBE JU held a public debate recently on the research agenda for the bioeconomy up to 2050. What are the main themes that need to be addressed in your view?

"We need more biorefinery and scale up demonstration sites across Europe to help scale and anchor us on the transition away from fossil and towards bio-based products," says Kevin O’Connor. (Photo credit: @CBE_JU / X)
what kind of research we should be doing to achieve the EU’s 2050 target of climate neutrality.

In my view, building biorefineries and making bio-based products is very important and we need more biorefinery and scale-up demonstration sites across Europe to help scale and accelerate the transition away from fossil and towards bio-based products.

However, the biobased sector can contribute much more in areas such as soil health, biodiversity and building sustainable communities, so its impact has the potential to be even larger.

Circularity is important so that we don’t replace a fossil economy with a linear bio-economy.

While this is already built into the CBE JU program, I believe there is more we can do – for example looking into the circularity of carbon-based materials or circularity around bio-based fertilisers.

Research on the bioeconomy must expand right back into the farm, beyond just simply supplying biomass. For example, some farmers are spreading manure using a technique called ‘low emission slurry spreading (LESS)’ where you spread manure directly onto the soil instead of onto the crop which helps to reduce emissions.

It is also about soil health: how do we ensure that the soil producing biomass now stays healthy so that it will be able to produce that biomass in 30 years time as well.

For instance, do we fully understand how the microbiome inside the soil works? Do we understand how we can actually enhance soil health through circular bioeconomy? The soil is an incredibly complex structure – it’s a living structure in fact, with bacteria, fungi, insects, as well as plant life. And it’s really important that we not just protect it, but actually enhance it.

Can you give examples of how agriculture can become more circular?

We first need to realise that agriculture was already circular in the past in many ways. Before the advent of fossil-based fertilisers, for example, we would have used animal wastes or seaweeds as fertiliser, which was commonplace in Ireland.

By using fossil-based fertilisers, we’re breaking that cycle and creating greater linearity. So we have to change how we do things, and put in place economic incentives to help agriculture and forestry actually implement strategies that are circular and better for the environment.

But these policies cost money. And you need policies to back farmers, mariners, fishermen and women to do the right thing. That is critically important.

Can fossil-based fertilisers be dropped entirely? And how quickly could this be done?

A phase-out is necessary, absolutely, but it won’t happen overnight.

One way of doing that is to use nitrogen-fixing plants. By introducing legumes, farmers can reduce the amount of fertiliser they use. You can also use protected fertilisers, like protected urea, which reduce the amount that you need to spread on the land, because it will sit there longer, last longer and slowly release into the soil. There are also bio-based alternatives to fossil-based fertilisers such as manures and seaweeds, which I have mentioned already, but also microbial bio-fertilisers.

But price is always the challenge. Again, the core issue is to incentivise change. If the bio-based alternative is more expensive, that’s where I think governments need to step in and drive those changes through financial incentives.

So the overall answer is yes, we can remove fossil-based fertilisers, but it’s going to take time, and it requires innovation, and investment.

Can you give a timeframe? Assuming policymakers do all the right things, how long would it take?

I think that’s a 15-20 year transition, at the very least, to make a 100% transition. But achieving a 20% or 50% transition as milestones is what you have to do to show this is possible. You have to bring people on a journey to change practices in agriculture, industry, government, and wider society.

And some of those practices are older practices that have to come back into existence.

Moving to plastics, do you think it’s achievable to replace all of it with bio-based? Or is there a scalability issue here that could hamper that transition?

I don’t think we should replace all the fossil-based plastics with bio-based plastics because the quantities are so huge. We have too much plastic in the world.

That way, we can envisage replacing fossil plastics with bio-based alternatives – for example by using bio-based biodegradable plastics such as those coming in contact with food, where food contamination, which interferes with mechanical recycling, is a high probability.

For others, like plastic bottles, recycling is going to be a more obvious choice.

What can be the contribution of the bioeconomy to EU’s 2030 climate target, which is around the corner?

Based on the projects that I’ve seen, it is clear that the bioeconomy can deliver carbon savings: they can reduce the carbon footprint of products, they can deliver new bio-based products.

It’s now about scaling those projects. While one bio-refinery is great but we need many more of them – biorefineries that are multi- feedstock, that can take waste not just virgin materials, but also side streams from agriculture, from forestry, from society, like food waste, etc.

So it’s complex, but the lifecycle analysis is clear that if you take these biomasses and convert them into bio-based chemicals and higher-value products, you can make those carbon savings.

There are a few hundred biorefineries currently in Europe. How many of them are multi-feedstock?

A lot of them are mono feedstock or maybe use two feedstocks because of seasonality. But multi-feedstock bio-refineries, by their nature, are incredibly difficult.

What we currently have is individual bio-refineries taking single feedstocks. The next phase of development will be bio-refineries that can take multiple feedstocks, so they can hedge economically and take a certain bio-based resource that’s available for example from Spring until Autumn and other feedstocks in winter.

Is this something that requires still a lot of research?

Yes, because you have a setup of biological and chemical reactors that are processing the biomass and their operation will be affected by the feedstock that’s coming in. So then you have to have that adaptability and flexibility to changes in feedstock. And that’s a huge challenge.

Past experience with biofuels shows that environmental issues usually come up when trying to scale up production with dedicated crops. How can we avoid those pitfalls going forward with the bioeconomy?

This is why lifecycle analyses are so critically important – so that we can actually demonstrate and quantify what is the impact of a particular value chain on the environment.

For instance, we must make sure that we produce bio-based products that are not going to harm the environment. If we know, based on the data, that producing these products is not the right answer, then we should stick to our guns and say that’s not the right answer but the same rules need to be applied to fossil-based products. We want biobased products to achieve the highest standards but fossil-based products already on the market need to be subjected to the same scrutiny.

Fuels are high-volume products and the negative impact of using high-volume biobased products on land use and competition with food has been reported many times.

However, the volumes of bio-based chemicals and bio-based materials are much less than biofuels. And the value of those is also much higher. So if you are going to produce a bio-refinery, it should be focused on bio-based chemicals and materials, because they require less volume in terms of biomass as well as carbon emissions.

That said, biofuels can also be produced as a side stream, as a result of producing these other materials. That’s okay in my view. But don’t make biofuels your primary product, otherwise you’re going to encounter environmental issues when going up to scale.

Society needs a mixture of energy solutions such as biofuels, bioenergy and renewable energy but we must produce them in a way that is sustainable and integrated with the production of higher-value products.

The European Commission made biofuels one of its policy priorities 15 years ago to reduce fossil fuels in transport. Now, they have made a U-turn and have placed a cap on the use of biofuels in transport.

Yes, and that’s because of the science, the life cycle analysis.

You know, as Europeans we have a more conservative relationship with failure than other parts of the world. And, to be fair to the European Commission, they want to invest in the right thing and when they saw the negative impact of biofuels, they changed position. I don’t see this as a failure but as learning from your experiences and moving in the right direction.

And so the future is bio-based
Bio-based materials and chemicals, because those are used as building blocks to make a multitude of products we use in our everyday lives.

Nature is fascinating because it has a complexity that fossils can’t make, and we need to tap into that complexity. This is true for materials made by nature and molecules that have biological activity.

For instance, mushrooms contain bioactives that are very good for our health, for reducing cholesterol for heart health, for brain health, etc. These types of products may be found only in the Mediterranean for example. But maybe through biorefineries, we can actually make them available to people also in Northern Germany, with the production of that bioactive ingredient in a biorefinery and that will help our ageing population, or young children.

So there are many ways to skin the cat as we say. But what’s really important is that the bioeconomy is about being in balance with nature – it’s about respecting nature and recognising that we are not in a bubble outside of nature.

Image to the right: Farmer spraying his rape seed crop (Shutterstock / stocksolutions)
The discussion on the future of the European circular bio-based sector will take place at the CBE JU Stakeholder Forum on 6-7 December 2023 in Brussels. The event will gather about 600 European bioeconomy stakeholders around the main theme 'What next for the European bio-based sector?' and will focus on these questions:

• How can the bio-based sector contribute to the ambitious goals of the European Green Deal?
• How to support consumers and industries replace fossil-based with circular bio-based solutions?
• How to scale up circular bio-based production in Europe?
• What R&I do we need to maintain European leadership in circular bio-based economy?

The event will feature an exhibition showcasing the highly innovative bio-based solutions developed by CBE JU-funded projects.

More information and registration:
The Circular Bio-based Europe Joint Undertaking (CBE JU) is a €2 billion partnership between the European Union and the Bio-based Industries Consortium (BIC) that funds projects advancing competitive circular bio-based industries in Europe.