Bioeconomy will play a crucial role in delivering the European Union’s environmental and climate neutrality agenda. The farm sector is no exception and at least half of the nine objectives of the post-2020 EU Common Agricultural Policy (CAP) relate directly to this concept.

The recently updated bioeconomy strategy now looks more at the concept of circular economy in general than at the mere re-use of energy, with the aim to strengthen and scale up an already vibrant European bio-based sector.

Insulating homes, producing bioplastics, making organic fertilisers out of wastes: the application of the bioeconomy to the agriculture production creates new business opportunities, provides additional income for farmers and increases their competitiveness.

But it also strengthens the role that the agriculture sector could have in environmental care and the protection of biodiversity.
EU bets on bioeconomy to deliver farming aspects of the Green Deal

French bio-waste finds second life in building insulation

Bioeconomy hype shouldn’t put biodiversity preservation at risk, experts say

Leave nothing to waste in agriculture: Spain’s race to top circular economy

Italy welcomes bioeconomy, kisses agricultural runoff goodbye

Germany’s new bioeconomy strategy criticised for overlooking agriculture, food production

Portuguese tech institute to produce advanced biofuels from tree-pruning-waste
The European Commission and the member states intend to use the concept of bioeconomy as a tool to achieve political priorities at the core of the bloc's new environmental flagship policy when it comes to agriculture.

Speaking before the Agriculture Committee of the Croatian parliament in Zagreb, Agriculture Commissioner Janusz Wojciechowski said bioeconomy is a great opportunity for agriculture and farmers to play a critical role in making the European Green Deal a success.

"If we want to decarbonise our economies, we will need to produce more biomass in order to produce energy and bio-based materials and chemicals," he said.

At last December’s Agrifish EU Council, Wojciechowski highlighted that the benefits the bioeconomy can deliver are fully in line with and can contribute to achieving the Green Deal’s political priorities.

As regards the practical side of the development strategy, the Commissioner focused his attention on applying a cross-sectoral, coherent and holistic approach, but also on the territorial dimension, which is crucial for bioeconomy.

“The role of policymakers at the national, regional and local level is very important to ensure developing locally rooted value chains but within a global strategic framework,” he said.

According to the Polish Commissioner, the promotion of these value chains, in which primary producers are fully and effectively integrated, is another pre-condition to achieve the objectives to create more skilful jobs and innovative know-how at the level of primary production.

Bioeconomy is also explicitly listed as part of the nine EU objectives and through national strategic plans laid down in the proposed CAP, all member states will outline how they want to meet these 9 EU-wide objectives, including the promotion of the bioeconomy, using the CAP tools.

"The proposed new delivery model is an opportunity for member states to develop tailor-made and more result-oriented interventions in this area," Wojciechowski said.

Continued on Page 5
A new impetus to the development of the framework came after the Commission updated the bioeconomy strategy in October 2018.

Originally conceived eight years ago as a way to encourage Europe to be less dependent on petroleum, the updated strategy has expanded the Commission’s strategy from focusing mainly on the production of biofuels to any kind of bio-based industry.

The bioeconomy strategy now looks more at the concept of circular economy in general than at the mere re-use of energy, with the aim to strengthen and scale up an already vibrant European bio-based sector.

An evaluation of the revised EU Bioeconomy Strategy is expected during the ongoing Croatian EU presidency, looking at its implementation even beyond the sector of agriculture.

After the updated strategy was released, two high-level conferences on bioeconomy were hosted in a row by the two rotating presidencies of the Council of the EU in 2019, the Romanian and the Finnish ones.

Under the Romanians, the focus was directed more on the research and innovation aspects, also considering the value of measures included in the current research framework program Horizon 2020 and the forthcoming Horizon Europe.

The topic of agricultural research should be brought back in the discussion of bioeconomy, as it is a catalyst for the future of agriculture, the Romanian agriculture minister Petre Dea said last June during the informal meeting with other EU ministers dedicated to the topic.

In the discussion among ministers, the need to ensure that farmers are enabled to have access and can use this knowledge was often pointed out. The Finnish presidency carried on with the discussion insisting that every member state should learn from one another, share best practices and adopt the “no one should be left behind” approach.

The Finns also highlighted the crucial role of farmers in achieving a European circular bioeconomy, but also of forest owners, who play an active role in tackling challenges linked to climate change.

EU agriculture ministers also stressed on several occasions that the added-value stemming from the bio-based value chains should be shared equally between the actors involved, including farmers, who are an integrated part of those value chains.

A third conference on bioeconomy is planned to be held by the end of April during the Croatian presidency, a Croatian diplomat told EURACTIV.

Bioeconomy is also explicitly mentioned in the programme of the Croatian presidency together with the emphasis on family farms and young farmers. In Zagreb, Commissioner Wojciechowski also underlined how the bioeconomy could provide a big boost to small and medium-sized family farms.
French bio-waste finds second life in building insulation

By Cécile Barbière | EURACTIV.fr / Translated by Daniel Eck

By using hemp, brewers grains and spelt husk, many French SMEs are starting to manufacture natural insulation materials based on bio-sourced materials and biowaste, which have not previously been ‘re-purposed’. In other words, they are using ‘green’ alternative to conventional insulation.

While the bioeconomy is developing all over France and Europe, the issue of waste has been brought to the forefront with the recent adoption of the law on waste and circular economy.

And a number of French SMEs have recently been ‘re-purposing’ waste from the agri-food industry to insulate buildings, instead of throwing it away.

France is one of the few European countries to have adopted a national strategy on the bioeconomy in 2017.

The strategy aims to accompany the development of the national strategy on the bioeconomy between 2018 and 2020 and is particularly aimed at the bioeconomy’s section that isn’t related

Continued on Page 7
Among the measures adopted is the creation of a European “bio-based product” label. Such a label already exists in France. It stipulates that labelled products contain a minimum of materials made from biomass (−70% for semi-rigid insulation), and facilitates access of bio-based products to public markets to encourage their use in administrations and public bodies (hospitals, schools, etc.).

According to figures provided by the AgriDées think tank, the bioeconomy accounts for around €2,100 billion in turnover in the European Union. And France’s share in the market amounts to €316 billion, making it the second-largest contributor behind Germany.

**INNOVATIVE SMES**

In France, the natural insulation sector, which relies on bio-based products, has begun to develop.

Hemp insulation, of which France is the world’s second-largest producer behind China, with straw or cellulose wadding has already proved its worth. The company Cellaouate in Brittany, for example, has been recycling newspapers since 2009 in order to create insulating panels.

However, in recent years new forms of natural insulation from biowaste have been developed by using, for instance, brewers’ grains or the waste generated by the cultivation of rice, spelt or buckwheat.

Compared to traditional insulation materials such as glass wool, these have a much better carbon balance, but also lower flammability than bio-sourced products (straw, etc.).

Cereal hulls, which aren’t often used by cereal growers, can usually be made into insulating balls. As a result, buckwheat husks, but also large spelt husks in north-eastern France and small spelt in Provence-Alpes-Côtes-d’Azur (PACA) are beginning to appear on the market, with the association “Batir en Balles” taking the lead.

In the PACA region, the SME Balleconcept uses the waste from the production of Camargue rice to offer insulating boots of different sizes. Usually used for animal bedding and stable mulching, rice husk has significant insulating advantages.

Rice husk is considered one of the cheapest insulators on the market with benefits such as moisture resistance and low flammability, it insulates in winter and summer thanks to its ability to stop the heat.

“Today, there are few bio-based materials that do this, and the straw does that a bit too,” explained Laurent Grosse of Adiabatic.
Bioeconomy hype shouldn’t put biodiversity preservation at risk, experts say

By Mateusz Kucharczyk | EURACTIV Poland

While experts say Poland could become key for the EU’s bioeconomy, scientists are calling for the sustainable use of the country’s forest resources in energy production.

The bioeconomy is expected to play an important role in achieving climate neutrality in the European Union and of the nine objectives of the future EU Common Agricultural Policy (CAP) for 2021-2027, at least half relate directly to the bioeconomy.

Managing renewable and mineral resources will play an important role in the EU’s path to climate neutrality and experts agree that Central and Eastern European countries, including Poland, have great potential in this field.

There is no shortage of support in Poland to replace coal-generated energy with energy produced from biomass. However, scientists warn against the damage to biodiversity that can be caused by treating bioenergy from forest biomass as a renewable energy source.

In March, the EU will present an updated biodiversity strategy, which is known to include “quantitative targets for increasing the area of land and sea protected areas with rich biodiversity”.

Continued on Page 9
Awareness of the role of ecosystems has increased in recent years, hence the efforts to save them. In a recent conversation with EURACTIV Poland, Zbigniew Karaczun from the Warsaw School of Life Sciences argued that the transfer of part of the funds from the CAP to the European Green Deal is beneficial for farmers because agriculture is increasingly affected by climate change.

This manifests itself in the form of droughts or heavy rainfall, which leads to consumers having to pay higher prices for agricultural produce. “The agricultural economy is most vulnerable to climate change and if it goes too far, it could be catastrophic for Europe’s farming sector and consequently affect food prices for consumers”, said Karaczun.

**POLISH ADVANTAGES**

In this context, the role of, for example, the new EU Forestry Strategy will increase in the next few years, including effective forestation, protection and reclamation of forests in Europe.

This will increase carbon sequestration, reduce forest fires and effectively promote the bioeconomy while respecting ecological principles.

To this end, the EU has asked individual EU member states to prepare strategic plans under the CAP for appropriate forest management measures.

The Bio-based Industries Consortium (BIC) report prepared in 2018 shows that Poland has the potential to become one of the European leaders in bioeconomy.

However, according to the authors of the analysis, it is necessary to prepare an appropriate strategy, undertake educational activities and implement innovations.

According to experts, the use of biomass on a wider scale in place of coal could be an opportunity for the Polish heating industry and energy suppliers. They are currently struggling with higher electricity prices for private consumers, which have on average risen 20% since the start of 2020, compared to last year.

**THE WARNING FROM SCIENTISTS**

In 2018, Hanna Bartoszewicz-Burczy from the Institute of Power Engineering argued in her analysis entitled “Potential and use of biomass in Central European countries” that Poland has a high share of agricultural land and forests, which should translate into high biomass potential.

The supporters argue that the burning of biomass is less invasive for the environment and is also outside the scope of the mechanism related to carbon emissions.

In Europe, the climate for obtaining energy by means of biomass combustion is favourable, taking into account, for example, the government’s desire to base the national power and heating sector on national resources.

However, there are also difficulties in this case. First of all, there is still a lack of systemic support for institutions that want to produce energy from biomass.

And there’s also the climate issue.

In November 2019, the last unresolved renewable energy sources auction took place, including PLN20 billion in the biomass basket to be distributed. However, uncertainty about the EU’s attitude towards biomass causes the Polish government to tread very carefully when it comes to plans to replace coal in power plants with biomass.

Scientists, who deal with the environment and climate on a daily basis, are definitely against this scenario.

In a letter to the government and parliament, they called for limited use of forest biomass in energy production. Experts suggest the solution to the problem of global climate change is to protect and rebuild forests – not to burn them.

“We already know that burning forest wood for energy production on a large scale threatens biodiversity and affects climate change,” the signatories of the letter wrote.

A similar view is held by representatives of the European think tank Sandbag. In December last year, they published a report entitled “Playing with fire”. It shows that an increase in the use of biomass considered as a renewable energy source may contribute to adverse climate changes.
Leave nothing to waste in agriculture: Spain’s race to top circular economy

By Juan Javier Ríos | EFEAgro

The agrifood sector is aiming to become a leader in the circular economy, in which every kind of waste, from crop to industrial waste, can have an added value and help improve economic, environmental and social sustainability.

“From the pig, we can even exploit the way it walks,” a Spanish farmer said, referring to the fact that all of the animal’s body parts are profitable, which is a notion at the heart of the circular economy’s philosophy. The pig industry is one of the most committed industries in the circular economy.

Pig excrement, known as slurry, is one of the livestock’s by-products that is leading in this respect thanks to the fact that, with good treatment and processing, it can be used as manure or as a method for producing biogas.

The livestock cooperative Jisap, established in Lorca, Spain, is an example of this philosophy in action. The cooperative uses slurry as an organic fertiliser which provides water but also micro and macronutrients for crops – provided they are used in right concentrations and rationally.

Sources from this group told EFEAGRO that they have integral management systems both on farms and in treatment plants.

Firstly they separate the solid part from the pig slurry to obtain manure that is then combined with those products that come from calf farms, allowing them to achieve “valuable” manure for farming. And the fluid part is submitted to physical-chemical processes. It will later be passed through biological filters, and they will then extract suitable water to be used as fertiliser.

This water will be applied in soils

Continued on Page 11
destined to produce cereals, oils and citrus that are next to those areas, which apply slurry treatments.

This way, they ensure that pig slurry is given a different use, but they also get organic fertilisers that help the soil to recover and reduce greenhouse gas emissions produced by the faeces.

Researchers from the Catalan Institute of Agrifood Research and Technology (IRTA) are aware of this possibility and are immersed in the European project called “Circular Agronomics”. The Project aims to ensure the recovery and recycling of nutrients throughout the agrifood chain, with the participation of centres for investigation and universities from ten different countries.

In this case, IRTA is in charge of implementing a project to valorise slurry and not only use it as a biofertiliser but as biogas and a generator of clean energy.

IRTA researcher Víctor Riau explained that the slurry will be treated in a factory in Lérida (Cataluña) with anaerobic digestion to obtain methane gas that could be used as energy.

Yet, with cows often being the main focus of attention due to their polluting properties, IRTA has decided to dedicate another project to dairy production of cattle.

They have already started with an investigation that aims to find out amounts of nitrogen and phosphorus are needed to ensure animal feed could lead to decreasing the volume of polluting emissions they release.

They will also study the influence of the different kind of beddings for cows so they can prove whether they influence the animal’s health in any way and whether these affect emissions.

**OLIVE OIL SECTOR LEADS THE WAY**

The goals of the circular economy are not alien to Spain’s agricultural sector. There are areas in which such practices have become commonplace, like in the olive oil sector, in which Spain is a global leader.

For example, in the Andalusian olive cooperative El Tejar, 30-35% of the “alperujo” that is produced in Spain (2.5 million tonnes per year) is being recycled. Alperujo is a by-product of the process of production of olive oil obtained in the oil mills.

El Tejar president Francisco Serrano told Efeagro that the “alperujo” is submitted to a centrifugation and drying process to obtain “orujillo”, which then goes to power plants so they can use it to produce electric energy through combustion.

With this treatment, they also obtain the ashes that are reused as agricultural fertiliser because it is rich in potassium and microelements.

The cooperative also gives new life to olive stones, used for example as fuel, and to the olive leaves because these contain polyphenols of high pharmaceutical value.

There are similar cases with other products, like in the case of persimmon, whose producer association just signed an agreement with the company Genia Global Energy – promoter of biogas plants – to obtain energy from the 18,000 tonnes of low-quality fruit that, in each campaign, doesn’t reach the market.

The produced biogas will be injected into the distribution network and it is renewable energy that can be stored and used as heat, electricity and fuel.

The industry is another ally, and in the case of the company Cerealto Siro Foods, with its partner Tuero, they have already started a new plant in Venta de Baños (Palencia) destined to produce biogas and organic fertiliser.

This way, they managed to reduce the shipments to landfills or waste treatment centres by 30,000 tonnes per year, which translates into a significant decrease of emissions.

The benefits will not only come because of the possible sale of biogas or fertiliser but also because of the savings in energy consumption, as has been highlighted by the company.

Recycling and zero emissions are the final goals of all these practices, which have changed the way we perceive the agrifood sector.
In 2017, Italy’s entire bioeconomy sector had a total turnover of €300 billion and, within 13 years, employed two million people. The country’s Bioeconomy Strategy was taken up a notch and made even more ambitious at the start of 2019.

Italy has invested heavily in the bioeconomy, primarily in research, also supported by the European Union.

The Italian Institute of Technology (IIT) has a team of researchers who are working on the use of biomass for the production of bioplastics. The waste materials which can be used are diverse, as discarded orange peels from orange juice production, coffee grounds, rice husks, corn, parsley, all of which researchers have converted to plastic.

And in relation to the circular economy, IIT researchers have developed bioplastic plant pots which, unlike plastic ones, are not thrown away when plants are re-planted. Instead, they are buried and degrade, providing the soil with nutrients – an example of perfect circularity.

**FERTILISERS FROM AGRO-INDUSTRY WASTE**

Many agrifood industries produce large quantities of waste. The tomato industry, for instance, processes millions of tons of tomatoes into peeled, pureed and concentrated tomatoes. [IIT]

Continued on Page 13
The skins and seeds of the fruits remain in factories before being sent to biogas plants, but in the future, they could be converted to food for rabbits and cattle.

Researchers from the National Research Council (CNR) have in fact used tomato processing by-products to enrich feed intended for rabbits and dairy cattle.

The positive aspects are twofold: making the most of waste and providing animals with healthier nutrition. And, in fact, analysis carried out on the meat of those animals revealed an increase in nutritional quality.

Researchers are now working on artichoke leaves and ‘pastazzo’ (the residue which remains after squeezing citrus fruits). However, there are two problems that need to be addressed: the seasonality of the products, which sees the availability of the by-products peaking in a limited timeframe; and the costs of transportation, storage and processing.

In the same EU Regulation 2019/1009 on fertilisers (available on Fertilgest, the portal dedicated to crop nutrition), organic and organo-mineral fertilisers, previously regulated at national level, are regulated for the first time at European level, a concrete step towards developing a circular economy, which would allow waste to become raw material (if it has certain characteristics).

Things that have been the basis of agriculture for thousands of years, like the use of livestock wastewatet as a fertiliser, could also reduce business expenditure as fertilisers no longer need to be purchased.

**NOT JUST FOSSIL FUELS**

A simple but effective method of reusing agri-food production waste is to transform biomass into energy.

Enzo Perri, a researcher at the Council for Agricultural Research and Agricultural Economy Analysis (CREA) told AgroNotizie that, “during the grinding of olives there is an abundance of stones which are an excellent source of energy. These can be used in a biomass burner for heating greenhouses or, as I do myself, heating the home”.

In addition to the pomace (pulp and stones), the milling industry produces large quantities of ‘vegetation water’, composed of water (70-80%), fatty acids and phenols.

Although such waste has become costly for the mills to dispose of these days, the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) has found a way to reuse it.

The researchers have developed a machine that transforms vegetation water into gas through a reforming process.

Silvano Tosti, author of the research and head of the ENEA Laboratory of Nuclear Technologies, told AgroNotizie that “the organic part of the water is first concentrated and then brought to a high temperature. With the help of a catalyst gases such as methane, hydrogen and carbon dioxide are released”.

In this way, the mill is autonomous in its disposal of vegetation water, and produces energy in the form of heat that can be used for industrial or domestic purposes.

Enabling farms to be energy independent is also one of the goals of CNH Industrial, which manufactures tractors under the New Holland, Case IH and Steyr brands.

The group intends to contribute to the development of energy independent farms capable of supplying their own energy needs independently, transforming biomass of agricultural origin into gas.

New Holland has, in fact, launched a methane-powered tractor prototype, the T6 Methane Power.
Germany’s federal cabinet adopted a new bioeconomy strategy last week, which has immediately been criticised for hardly mentioning agricultural reform and focusing too much on technology and optimisation.

“Tires made of dandelions, car doors made of hemp fibres, or rubber boots made of corn”. These were the examples Agriculture Minister Julia Klöckner cited when she unveiled Germany’s new bioeconomy strategy, which the federal cabinet approved on 15 January.

The strategy is the third of its kind and thus updates the previous versions from 2010 and 2013. Its logic sounds impressively simple: The economy should increasingly switch to renewable raw materials, meaning it should become independent of coal, oil and gas.

While Germans have to import most of their fossil fuels, renewable energies are growing on meadows, fields and in forests, according to Germany’s strategy for the bioeconomy is not an isolated case, given that around 60 countries have developed such strategies across the globe with the aim of converting their economies to become more sustainable and circular. [RTimages/Shutterstock]
Klöckner.

The broad strategy that Klöckner’s ministry has drawn up, together with the research ministry, is based on two main principles. While it focuses strongly on biotechnology and research, more biogenic raw materials are to be made available to the industry. Some of the basic materials for bio-economic products include, for example, plants, microorganisms, algae or fungi.

Germany’s strategy is not an isolated case, given that around 60 countries have developed such bioeconomy strategies across the globe with the aim of converting their economies to become more sustainable and circular.

For Research Minister Anja Karliczek, this clearly offers economic opportunities as well because a sustainable economy secures Germany “a leading position on the markets of the future in the long term”.

THE STRATEGY DOES NOT ADDRESS THE CAP

Although experts have praised the strategy because it is forward-looking, it is still being criticised. In a detailed evaluation of the strategy, the Nature and Biodiversity Conservation Union (Nabu) has criticised the strategy for focusing too much on biology and omitting more social aspects.

“Sustainable development also requires cultural, economic and institutional changes that will not be without resistance and conflict,” the environmentalists have warned.

The environmental organisation has criticised the strategy for simply not featuring any institutional changes, including the CAP.

Yet, in the EU’s Bioeconomy Strategy, which the Commission presented in October 2018, improving the living conditions for farmers and fishermen is mentioned as a clear goal, which is also listed as one of the nine objectives of the CAP.

However, neither the CAP nor its other objectives such as restructuring food chains, preserving landscapes or ensuring healthy food are mentioned in Germany’s bioeconomy plan.

Instead, Nabu has criticised the strategy’s focus on digital optimisation, which relies far too much on technology and the optimisation of individual plants.

BIOECONOMY VS FOOD PRODUCTION?

For its part, the opposition has argued exactly the opposite. The technology-savvy Free Democratic Party (FDP) believes that the new strategy not only lacks defined and measurable goals but also lacks “a positive commitment to the opportunities of genetic engineering” with regard to agriculture.

The FDP believes that for Germany to be able to profit from the opportunities offered by the bioeconomy, the 20-year-old German Genetic Engineering Law must be reformed and adapted to new breeding methods, according to the technology policy spokesperson of the FDP parliamentary group, Mario Brandenburg.

His party has submitted a motion to this effect to the German Bundestag.

So, to what extent does the bioeconomy contribute, and how does it hinder sustainable food production? After all, the large-scale cultivation of regenerative materials for the economy also means less space for food production in the fields.

The strategy also provides for the expansion of the existing Bioeconomy Council of the German government to ensure a discussion of the bioeconomy’s limits and conflicting goals. Representatives from industry and society are to discuss, among other things, how the bioeconomy can guarantee food safety.

However, this dilemma cannot be solved by new technologies alone, as suggested by the German government, said the managing director of Nabu, Leif Miller. And the government needs to come clean with all those involved, as “the economy’s transformation will only succeed if we consume less”.

Continued from Page 14
A project to use the waste from pruning vines and fruit trees to produce advanced biofuel is being developed at the BLC3 Campus of Technology and Innovation in Oliveira do Hospital, the campus president said.

The BLC3 association “is developing a circular economy project in the agricultural sector, where it aims to use the waste from agricultural activities, such as pruning waste from olive trees, vines and other fruit trees” to “produce advanced biofuel,” the president of the BLC3 Technology and Innovation Campus, João Nunes, told Lusa news agency.

The project, “with the potential application also to the forestry sector“, also recommends that “waste from crops” be used in the production of biofuel.

Production will be conducted “in an efficient way and with carbon emission levels much lower than from fossils”, João Nunes highlighted.

Around 360,000 hectares of the land area are olive groves, while 178,000 hectares are vineyards and 45,000 are used for producing fresh fruit.

Continued on Page 17
The advanced biofuel produced by this method is "similar and equivalent to agricultural diesel". "Agriculture is very important for the economy, and if we can integrate the efficient use of resources, it has a potential for growth, in terms of competitiveness", the president continued.

In Portugal "we have 3.6 million hectares of agriculture (39.5% of the total land area), with more than 360,000 farms", which represents an average of 10 hectares per farm.

With this average farm size, the sector is naturally "not very competitive in terms of scale" and this has "an impact on the use of resources and carbon emissions".

Around 360,000 hectares of the land area are olive groves, while 178,000 hectares are vineyards and 45,000 are used for producing fresh fruit. João Nunes said these generate "a high amount of biomass waste" and explained that "we could be talking about one million tons of waste annually in these sectors alone".

However, this figure is "always difficult to quantify because it depends on agricultural production itself".

"Agricultural cultivation systems, which generate high quantities of biomass, have the potential and interest to produce their fuel" to use in their machinery, João Nunes concluded.

The BLC3 Campus of Technology and Innovation is a non-profit association, founded in 2010. It is a "new model of development of research activities and technological intensification of excellence, incubation of ideas and companies, and support to the economic fabric in inland and rural regions".

It is the only organisation in Portugal created for the development and industrialisation of biorefineries (second and third generations), the bioeconomy and 'smart regions', with a focus on the circular economy, according to the BLC3 website.

It should be noted that the Collaborative Laboratory (CoLab) for the Circular Economy, which was very recently based at its Campus in Oliveira do Hospital, develops activities across three technological platforms. These include industrial biotechnology, sustainable separation processes and green chemistry, as well as ecodesign.

CoLab will be "a structure of excellence in an interior region with capacity for leadership and Portuguese representation in the circular economy at the international level".
Contact us

Elena Barba
EU Project Manager
elena.barba@euractiv.com
tel. +32 (0)2 788 36 60

Martina Paterniti
Project Manager
martina.paterniti@euractiv.com
tel. +32 (0)2 788 36 83