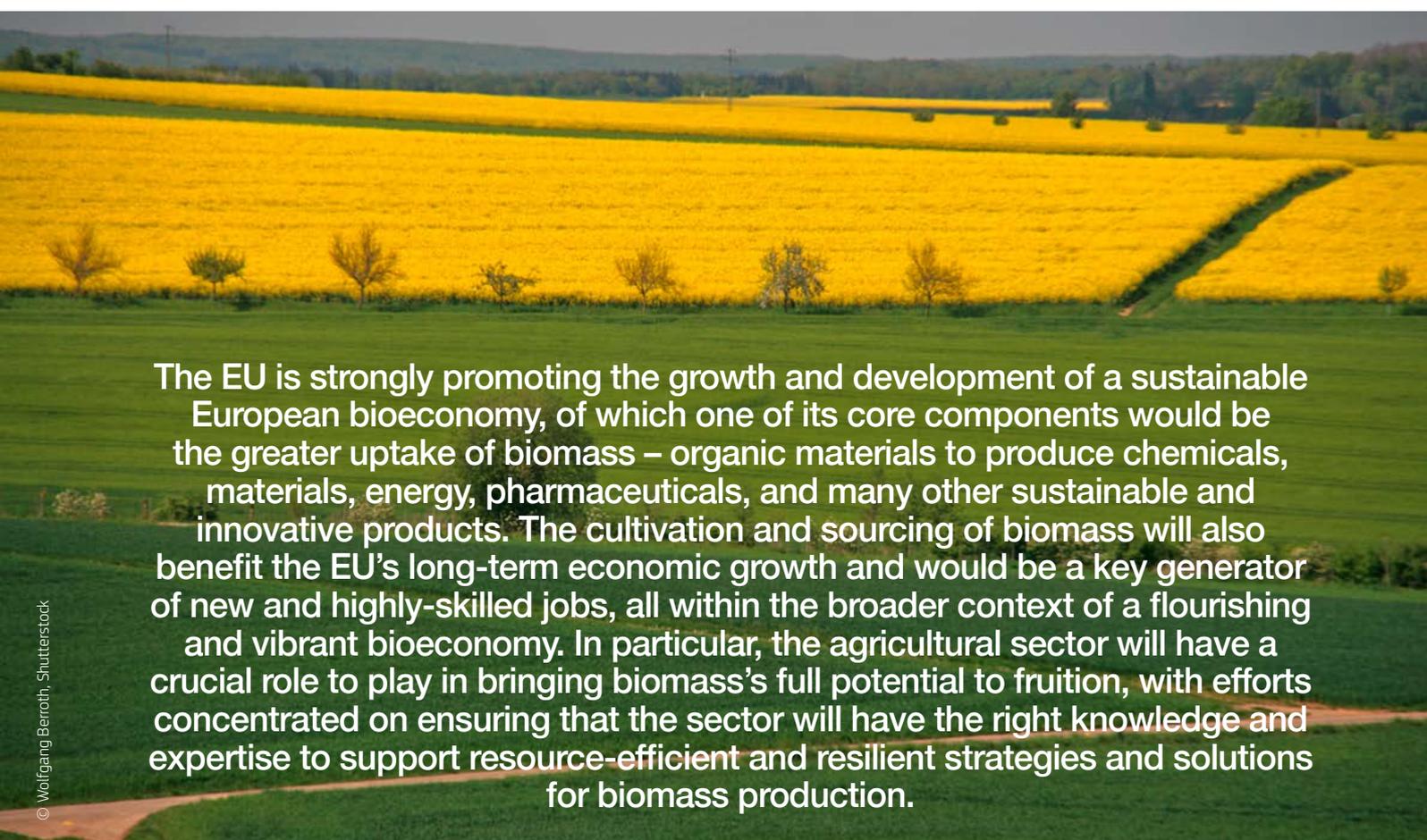


A biomass boost to Europe's bioeconomy



The EU is strongly promoting the growth and development of a sustainable European bioeconomy, of which one of its core components would be the greater uptake of biomass – organic materials to produce chemicals, materials, energy, pharmaceuticals, and many other sustainable and innovative products. The cultivation and sourcing of biomass will also benefit the EU's long-term economic growth and would be a key generator of new and highly-skilled jobs, all within the broader context of a flourishing and vibrant bioeconomy. In particular, the agricultural sector will have a crucial role to play in bringing biomass's full potential to fruition, with efforts concentrated on ensuring that the sector will have the right knowledge and expertise to support resource-efficient and resilient strategies and solutions for biomass production.

© Wolfgang Berroth, Shutterstock

BIOMASS: THE CHALLENGES

The European Commission calculates that biomass could account for two-thirds of the EU's renewable energy target in 2020. This means a further increase in biomass use but there are several key conditions that must be addressed before this can become a tangible reality.

Europe needs to secure a biomass supply that is sufficient, sustainable, reliable and affordable. At the same time, biomass production cannot jeopardise European food production. Thus land management strategies need to take into account the expected increase in biomass production.

Europe also needs biomass for driving other parts of its emerging bio-based economy. Fossil resources currently make

up 90% of the organic raw materials used by the EU chemicals industry to make non-energy related materials and chemicals. As the world will have to eventually give up its reliance on fossil fuels, access to alternative organic raw materials – mainly biomass – is a critical strategic issue for our chemicals industry. Worldwide the demand for biomass in the chemical-technical sector has been predicted to grow from 59 million tons to between 500 and 1,000 million tons in 2050.

Finally, Europe needs to invest in modern and state-of-the-art infrastructure and technology to make the most out of all the opportunities that biomass promises to deliver.





EUOPRUNING I (Development and implementation of a new, and non-existent, logistics chain for biomass from pruning)

This project has implemented a true pruning-to-energy value chain by introducing new technology and by removing barriers to the use of agricultural residues as an energy resource, thus providing a big boost to Europe's bioeconomy.

[HTTP://WWW.EUOPRUNING.EU/](http://www.euopruning.eu/)

GRASSMARGINS I (Enhancing biomass production from marginal lands with perennial grasses)

GRASSMARGINS has identified the best perennial grasses to cultivate as biomass crops on marginal non-arable land. Through mapping the available gene pool, the project identified the most suitable species to maximise yields and productivity across Europe's farms.



[HTTP://WWW.GRASSMARGINS.COM/](http://www.grassmargins.com/)



ITAKA I (Initiative Towards sustAinable Kerosense for Aviation)

ITAKA has paved the way for the development of commercial biojet fuel value chains, opening up an exciting new element in the growth of the European bioeconomy. Utilising cultivated camelina oil and Used Cooking Oil (UCO), several major airlines and airports have already signed up to use the groundbreaking new and environmentally friendly fuel.

[HTTP://WWW.ITAKA-PROJECT.EU/DEFAULT.ASPX](http://www.itaka-project.eu/default.aspx)

LOGISTEC I (Logistics for Energy Crops' Biomass)

Pioneering methods that enhance biomass logistics for energy production from harvesting to transport and storage, LOGISTEC is contributing to the growth of a truly sustainable bioeconomy. LOGISTEC's solutions are already improving biomass supply chain management, with several project partners taking the technology to the next commercial level.



[HTTP://WWW.LOGISTECPROJECT.EU/](http://www.logistecproject.eu/)



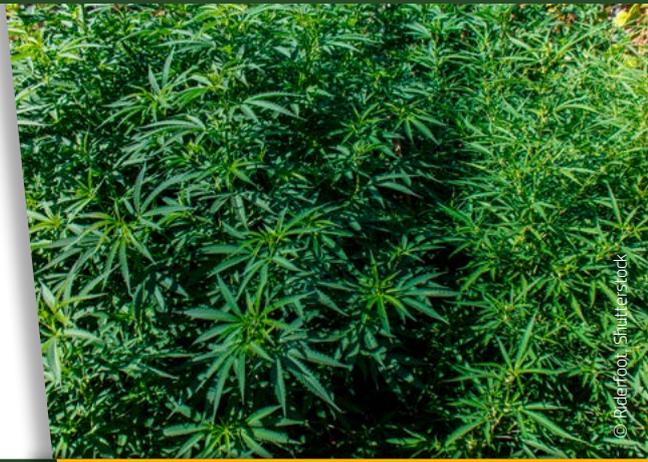
MULTIBIOPRO I (The development and evaluation of Multipurpose crops as new biorefining feedstocks for the production of industrial BioProducts and biomass)

The MULTIBIOPRO project has developed and implemented multipurpose crops capable of delivering improved biomass extractability and new sources of non-food oils, biomaterials and other valuable bio-products that will be of enormous benefit to society as a whole.

[HTTP://WWW.MULTIBIOPRO.EU/](http://www.multibiopro.eu/)

MULTIHEMP I (Multipurpose hemp for industrial bioproducts and biomass)

MULTIHEMP has developed new varieties of hemp, capable of feeding an innovative hemp bio-refinery. The project's successes will help Europe achieve its ambitious aims in the fight against climate change, as these novel and sustainable hemp plants may one day replace more environmentally damaging materials, such as cotton and synthetic materials.



[HTTP://MULTIHEMP.EU/PROJECT/](http://multi hemp.eu/project/)



OPTIMA I (Optimisation of Perennial Grasses for Biomass Production)

The OPTIMA project has cultivated high-yielding perennial grasses capable of being grown on marginal agricultural lands and serving as a source for new and sustainable plant-derived bio-products. By offering new options to maximise the use of marginal lands, the project's promising results could lead to new sources of income and employment for rural regions.

[HTTP://WWW.OPTIMAFP7.EU/](http://www.optimafp7.eu/)

OPTIMISC I (Optimising Miscanthus Biomass Production)

OPTIMISC set out to study and improve the potential of Miscanthus grass for biomass production. Through extensive laboratory and field tests the first new commercial varieties are now close to entering the market, with the project's promising results currently being presented to various representatives in the biomass and biorefinery industries.



[HTTPS://OPTIMISC.UNI-HOHENHEIM.DE/](https://optimisc.uni-hohenheim.de/)

Biomass: Solutions for Europe

The EU is dedicated to ensuring that biomass can meet its full potential and provide Europe's agricultural sector with all of the support and tools that it needs to take full advantage of all of the benefits that biomass will bring. A booming biomass-fuelled bioeconomy will generate highly skilled jobs and make an important contribution to Europe's long-term economic growth prospects.

The EU bioeconomy already had a turnover of nearly EUR 2 trillion and employs more than 22 million people, 9% of total employment in the EU. It includes agriculture, forestry, fisheries, food and pulp and paper production, as well as parts of chemical, biotechnological and energy industries. Estimates made by the European Commission conclude that a shift to biological raw materials and biological processing methods could save up to 2.5 billion tons of CO₂ equivalent per year by 2030, increasing markets for bio-based raw materials and new consumer products several-fold. Biomass will be a crucial ingredient in reaching this aim.

On 13 February 2012, the EU launched its Bioeconomy Strategy that aimed to frame and coordinate all of Europe's various policy, research and economic actions and actors into realising a fully functioning and extensive bioeconomy. It is not a single piece of legislation, rather an overarching document that focuses on three key aspects: developing new technologies and processes for the bioeconomy; developing markets and competitiveness in bioeconomy sectors; and pushing policymakers and stakeholders to work more closely together. The Strategy is due to be comprehensively reviewed and possibly updated by 2018 to take into account latest developments and priorities.

Each euro invested in EU-funded bioeconomy research and innovation is estimated to trigger EUR 10 of added value in bioeconomy sectors by 2025. This is why the EU's Seventh Framework Programme (FP7), and now Horizon 2020, has focused substantial R&I efforts on biomass development. In particular, efforts have concentrated on:

- Utilising marginal lands for the cultivation of biomass crops
- Multipurpose crops (i.e. providing food but also non-food outputs, such as novel bio-based processes)
- New technologies for the mobilisation and valorisation of agro-food waste

- Low-input crops with high productivity and improved properties for bioeconomy purposes
- Cutting-edge equipment and logistics for biomass mobilisation and conditioning
- Multi-cropping systems combining food and non-food crops in the same space, through rotations or intercropping.

Under Horizon 2020 efforts have continued to build upon the work already undertaken by European researchers in FP7. More specifically, researchers under Horizon 2020 are working hard to establish reliable, sustainable and appropriate supply chains of biomass, byproducts and waste streams and a wide network of state-of-the-art bio-refineries throughout Europe.

A significant level of support is also being allocated towards wider market development for biomass-derived products and processes that will create significant new possibilities for biomass innovations. These efforts will also open new markets, both in Europe and in the wider world.

Farmers and other skilled professions within the European agricultural sector are at the forefront of these research efforts and are actively collaborating with many of the innovative biomass-focused research projects currently being undertaken. Europe cannot and will not be able to integrate biomass into its wider bioeconomy without taking advantage of their skills and expertise.

A modernised twenty-first century agricultural sector, equipped with the most cutting-edge technologies and scientific expertise will ensure that Europe has the solutions to not only make the most out of its fertile lands for food production but will also be able to contribute to sufficiently, sustainably and reliably powering Europe's industries and cities. Biomass will be one of the key ingredients for achieving this ambition.

Learn more about EU policies for Agricultural Biomass at:
<http://ec.europa.eu/agriculture/> and https://ec.europa.eu/agriculture/bioenergy/potential_en

