



# Policy Brief

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## Bio-based Circular Economy in Europe

### Circular Economy Enabling Sustainability

Sustainability, in terms of economic models, is defined as the achievement of current needs without directly or indirectly compromising the needs of future generations. This is closely linked to circular economy (CE). CE differs from an 'unsustainable' traditional linear economy by introducing a cyclical flow model. CE represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and societal benefits (Ellen MacArthur Foundation, 2017). CE promotes an environmentally sound use of resources and the idea of new business models. According to its definition (European Commission, 2015), CE aims to enable the maximisation of resource efficiency and minimisation of waste production, simultaneously benefiting the environment and tackling production costs.

### Circular Economy Benefits in Numbers

Switching to a CE in the food, mobility, and built environment sectors is estimated to generate a prospective reduction in greenhouse gas emissions of 48% by 2030 and 83% by 2050, compared with 2012 levels. The annual net benefits for EU-27 businesses from implementing resource-efficiency/CE measures, such as waste prevention, the recovery of materials, changing procurement

practices, and the redesign of products are estimated to range from EUR 245 billion to EUR 604 billion, representing an average of 3–8% of annual turnover (European Environmental Agency, 2016).

### Circular Economy Policy Framework in the EU

The term CE was presented in the EU context in 2011 through the Flagship Initiative, under the Europe 2020 Strategy concerning a resource-efficient Europe. The initiative stated that there was a need for a strategy to make the EU a 'circular economy'. In 2015, the European Commission released a CE package, proposing a series of actions towards CE. With the aim to boost efficient production, the roadmap stipulates that Member States should help companies collaborate to make the best use of the waste and by-products they produce, e.g. by exploiting industrial symbiosis.

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# Towards Bio-based Circular Economy Implementation

'Bioeconomy' can be defined as an economy where materials, chemicals, and energy are developed and derived from renewable biological resources. In the Bioeconomy Strategy (European Commission, 2012), bioeconomy is defined as an economy that relies on renewable biological resources (e.g. crops, forests, and animals) and their conversion into food, feed, products, materials, and energy. Bioeconomy includes agriculture, forestry, fisheries, food production, and pulp and paper production, as well as parts of the chemical, biotechnological, and energy industries.

The bioeconomy touches a large number of policy areas. It should therefore be handled through horizontal policies and be taken into consideration on several levels. Twinning bioeconomy and CE together could lead to strong synergies. Implemented policies shall originate from identified good practices in order to establish a bioeconomy that uses bio-based resources in a circular way, forming the idea of bio-based CE.

## EU Bioeconomy Strategy Update

The 2012 EU Bioeconomy Strategy will be updated during 2018. Due to recent policy developments, the update was necessary to ensure better focus and alignment with EU political priorities and future challenges. The update will reinforce a sustainable circular bioeconomy in Europe (European Commission, 2017).

According to BIOREGIO, strengthening the circularity and sustainability of bioeconomy shall be the core issues of the expected update. The importance of understanding the effect of bioeconomy

on natural resources and ecosystem services should be of utmost priority, while a deeper exploration of the relations between biosphere and economic activity is needed for better understanding of bioeconomy. One important challenge is strengthening education and knowledge for bioeconomy to be successful in all sectors, especially in agriculture, agri-food value chains, and bioenergy production. Therefore, it is vital to identify value-added activities that support investment in production, research, processing, and retail and marketing (European Commission, 2018).

## Good Practices in Bio-based Circular Economy

To achieve CE, the European Commission (2015) states that national, regional, and local authorities are key roles in enabling the transition. Consequently, CE requires efforts at different levels to reach a holistic approach.

The BIOREGIO project identifies and promotes bio-based CE in six European regions. Transferable and replicable good practices on bio-based CE comprise cooperation models, such as ecosystems and networks, and the best available technological solutions are shared and applied in other EU regions. Good practices recognised in the project are available at: [www.interregeurope.eu/bioregio/good-practices](http://www.interregeurope.eu/bioregio/good-practices)

BIOREGIO conducted a study on bio-based CE in selected national and regional EU strategies. The results and conclusions were presented at the Waste Management 2018 conference in Seville, Spain 17.-19.9.2018. The article will be available online in November 2018.



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