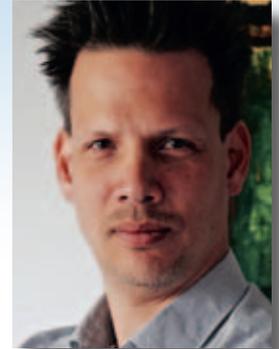


Bioeconomy: circular by nature



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The Circular Economy should be embraced by all if it can solve our societal challenges and create new wealth and jobs. Projected socio-economic and environmental benefits for Europe are impressive. But these benefits will be truly felt if the bioeconomy - the renewable part of the circular economy concept - is made to play its important and growing role.

Circular economy: just a new buzzword?

The EU is set to make legislative proposals that would break away from the traditional European linear economic model of make-use-dispose, in favour of a circular and regenerative model that uses resources in a smart and efficient way, turns waste into a new resource, and considers sustainability and circularity in the design of products and processes. No doubt that the entire Brussels stakeholder community is on alert.

The circular economy will mean different things to different sectors. It might be good news for some, but for others it might mean having to battle for survival. It should therefore be a surprise to no one if each sector seeks to shape legislation in their favour.

The political context cannot be clearer. Europe's economic woes, high unemployment, energy vulnerability, and catastrophic climate change certainly justify the need for innovative and ambitious initiatives. As the European Commission puts it in its Circular economy roadmap, this initiative is meant as a new boost for Jobs, Growth and Investment and placed within the wider context of the Commission's commitment towards sustainable development. Moreover, eco-industries and eco-innovation currently supply a third of the global market for

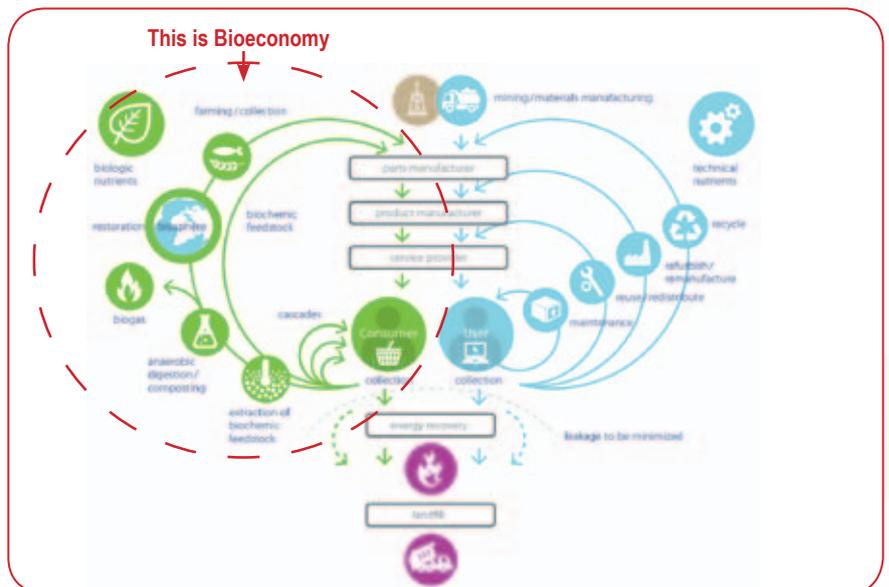
green technologies, worth a trillion euro and expected to double by 2020. This initiative aims to reinforce this trend, thus contributing to green growth and to other EU priorities such as the work towards developing a Resilient Energy Union with a Forward-Looking Climate Change Policy. If the circular economy can effectively solve these major societal challenges while being profitable, then we should all probably embrace it.

Leadership will be needed

EU governments and Members of the European Parliament (MEPs) will have to decide on how to go about legislating on this one: as a team deploying a vision for Europe, or as the sum of national interests? The circular economy is an opportunity to lead Europe and its citizens into the economic model of the 21st century. If done

coherently, the Ellen MacArthur Foundation's *Growth Within: A Circular economy vision for a competitive Europe* project the following key benefits for Europe:

- Overall benefits of €1.8 trillion by 2030, or twice the benefits seen on the current development path (€0.9 trillion);
- Europe can take advantage of the technology revolution and increase average disposable income for EU households by €3,000, or 11% higher than the current development path;
- An 11% GDP increase by 2030 versus today, compared with 4% in the current development path;
- 48% CO₂ emissions reduction by 2030, across the three basic needs studied, or 84% by 2050;



Source: Ellen MacArthur Foundation

- Primary material consumption measured by car and construction materials, real estate land, synthetic fertiliser, pesticides, agricultural water use, fuels, and non-renewable electricity could drop 32% by 2030 and 53% by 2050, compared with today;
- Positive employment effects occurring if the circular economy is implemented.

Political leadership more than mere interest representation will be needed to convert this potential into reality.

Bioeconomy: circular by nature

To date, the role of the bioeconomy in spurring the circularity of the economy is hardly recognised in related conversations. Yet, the EU has a Bioeconomy Strategy in place since 2012, and since July 2014, it has a Public-Private Partnership on Bio-based Industries (BBI) that invests €3.7 billion in innovative technologies and biorefineries that already convert biomass and wastes into greener everyday products such as food, feed, fibers, chemicals, materials, fuels and energy.

The bioeconomy is circular by nature because carbon is sequestered from the atmosphere by plants. After uses and reuses of products made from those plants, the carbon is cycled back as soil carbon or as atmospheric carbon once again.

Bioeconomy: enabling and complementing the circular economy

The circular economy focuses mainly on the efficient use of finite resources and ensures that those are reused or recycled as long as possible. The bioeconomy integrates the production of renewable resources, in particular renewable carbon. The principle of the circular economy is thus complementary to the renewable character of the bioeconomy and must facilitate the recycling of carbon after efficient uses. The bioeconomy is thus a perfect illustration of circularity in that it regenerates CO₂ and uses renewable raw materials to make greener everyday products.

A waste management system that fully considers the potential of agricultural, forestry and municipal (biogenic) wastes will be essential to enable the circular economy.

Growth of bioeconomy = growth of the renewable circular economy

- The bioeconomy uses renewable resources instead of fossil resources. Biorefineries play the central role of intelligently converting biomass and wastes through efficient and innovative technologies into a plethora of bio-based products.
- The bioeconomy is not new. It is already worth €2 trillion and is responsible for over 22 million jobs in Europe. It has recently become an EU strategic priority for its recognised potential in stimulating sustainable growth and jobs; using renewable resources in a smart and efficient way; making Europe more self-sufficient; and in reducing global GHG emissions.
- The EU and the Bio-based Industries Consortium joined forces to kick-start a 10-year investment of €3.7 billion through the BBI. It focuses on 1) securing sustainable supply of biomass, 2) optimising/building new value chains and biorefineries, and 3) creating new markets for bio-based products. The BBI is needed to de-risk an emerging sector and to create the

framework conditions needed to leverage Europe's renewable resources, innovative technologies and industrial know-how. This is important if the EU wishes to establish itself as a competitive force in the global bioeconomy race, especially with the US, Brazil and China.

- Bio-based products and materials have the benefit of achieving a more balanced carbon cycle in comparison to fossil alternatives. The rate at which CO₂ is emitted from bio-based products matches the rate at which it's been sequestered in the biomass. The rate at which CO₂ is released from fossil based products (1-10 years) is significantly higher than the millions of years it took for CO₂ (organic matter) to be fossilised and sequestered into petroleum, natural gas or coal.

In other words, the bioeconomy and the BBI are instrumental in demonstrating and commercialising sustainable bio-based ingredients, products and materials that can feed the EU's circular economy. Indeed, the circular economy is not just about waste management. Upcoming policy will have to factor in criteria beyond conventional approaches, and reflect on the cross sector nature of bio-based industries, markets, products and processes to maximise the EU's circular economy potential.

