



**FROM A LINEAR TO A CIRCULAR ECONOMY :**  
**Key pillar in the future development of the**  
**European market and the European Green Deal**

## 1. Introduction.

The actual industrial production is structured according to a linear model: the resources are extracted, combined and processed, consumed and thrown away.

This linear process finds its origins in the industrial revolution, based upon a model of continuous growth and increasing resource throughput, resulting in environmental degradation and overconsumption of natural resources.

Linearity is deeply institutionalised and promoted by (Anglo-Saxon) management-schools, major enterprises and multinationals, and the financial sector (banking/insurances).

Meanwhile, there is a growing interest amongst SME's, regional and local governments and consumers to abandon the linear model and to investigate the opportunities that can be delivered by the organisation of industry, based upon circularity.





## 2. What is circular economy

### a. Definition

Circular economy is an economic system that replaces end-of life concepts with reducing, alternatively reusing, recycling and recovering materials in production/distribution and consumption processes. It operates at the micro level, the meso level and the macro level, with the aim to accomplish sustainable development, thus simultaneously creating environmental quality, economic prosperity and social equity, to benefit the current and future generations. It is enabled by new business models and responsible consumers (Kircherr, Reike, Hekkert, 2017).



b. The road from a linear to a circular economy.

The transition to a circular economy is a process of building up a new economic and value system, and breaking down traditional way of economic development. It leads to strategies in which the value of products, materials and resources is maintained as long as possible. Therefore, new business models need to be developed. This implies that industry must maximise profits through the reuse of components and goods. This can be achieved through design to re-design, as well as maximising the efforts to reuse products and to recover materials.

The producers remain responsible for their products throughout the whole life cycles, whereby the consumers can buy high quality products and services that are apt for reuse or high-value recycling.

In order to realise this transition, there is more needed than technological innovations. A complete new organisation of the production chains needs to be designed. This is only possible insofar new financial arrangements and tools can be developed that compensate the involved stakeholders, as all these stakeholders make a contribution in the field of redesigning , reusing and recycling of the products. Alignment with the suppliers and with the customers is elementary. Cooperation with research centres is important and the governments need to define the necessary preconditions for the circular production, and the civil society must be willing to accept the new circular products.

The change to a circular economy is not just a technological endeavour, but also an institutional, organisational, socio-economic and behavioural strain.



### c. Circular economy and sustainable development

Circular economy and sustainable development are two concepts that are related, but cover a different reality.

Circular economy and sustainable development are both global concepts, referring to the current state of technology, industrial production and consumption, and they refer to a better integration of the environmental and social dimension with the economic progress.

However, sustainable development is a far much broader concept than circular economy. Sustainable development covers a multitude of objectives, described in the 17 Sustainable Development Goals. These objectives refer a.o. to the eradication of hunger and poverty.



### 3. How to build the road to circular economy

#### a. How to reach circularity within the industrial production

The industrial production consists of different phases. In order to reach the goal of circularity, there is a need to consider the full production process and to investigate which actions can be taken in order to speed up the transition process from linear to circular economy. Key phases are a.o :

- Product design

80% of the environmental impact of the products is defined during the design phase. Today there is no set of requirements to ensure that all products, placed on the EU market, stand the test of circularity. A first attempt has been made in the sector of the energy-related products by launching the ECODESIGN directive. Considering this situation , the EU Commission intends to enlarge the ECODESIGN framework to the broadest possible range of products in order to strengthen the transition to circular economy. This can be combined with the following measures:

- Increasing the recycled content in products
- Restricting single-use products
- Ban on the destruction of unsold durable goods

- Reforming the consumer market

Empowering consumers and offering them cost-saving opportunities is a key pillar in the transition from a linear to a circular market. Therefore, it is important that the consumers receive relevant information about the quality of the products, about the lifespan and about the availability of repair services.





## b. Obstacles for the introduction of circular economy

The transition from a linear to a circular economy is a very complex process. It is facing a lot of barriers and needs to overcome major obstacles, which are blocking this fundamental change.

There are different kind of obstacles:

- Institutional obstacles - the government is short-term orientated and supports the silo approach; the traditional management doctrines are worshipping the position and the money of the shareholders linked to a short term vision
- Organisational obstacles – lack of governance and coordination in building the networks that can initiate and steer circular processes
- Legal obstacles – legislative frameworks block the reorganisation of the reconversion of the production process , of fiscal distortions, supporting the use and the transformation of primary materials within the production processes
- Economic obstacles – exclusive focus on traditional business models, based upon risk aversion – lack of decent sustainable business models
- Financial obstacles – the full banking and insurance system is focused on supporting the linear economy and protects the interests of the shareholders and their hunger for instant profit – lack of acceptable models of life-cycle costing
- Behavioural obstacles – reluctance to change the fundamental attitudes of both production as well as consumption patterns.
- Technical and technological obstacles - lack of attention for innovation of the traditional production and consumption patterns, whereby the life-cycle costing is not even considered
- Information and awareness – lack of financial knowledge about the circular economy, including the identification of the hidden costs , that are never calculated in the linear production and consumer practices; the booming of unsustainable webshops, specialised in disposable goods, is a key example.
- Capacity – insufficient value chain collaboration, including the limited understanding of co-benefits



- Organisational obstacles – lack of support for first movers and limited understanding of the return of circular economy investments
- Cultural obstacles – insufficient market validation of the circular products by the consumers, due to lack of information or traditional social barriers (individual ownership as key business model).



### c. Impact of Circular economy in different sectors

Within the context of the Circular Economy Action Plan of the EU Commission, the reform of the key value chains in certain sectors are more urgent in order to reach the targets of the Green Deal.

Therefore, within the scope of the Action Plan, certain sectors have been considered as key wharfs in order to make progress on the way to circular economy, defining a multitude of measures:

- Electronics and ICT, including measures like the right to repair
- Batteries and vehicles, including measures like the phasing-out of non-rechargeable batteries
- Packaging, including measures for the re-use of packaging
- Plastics, including measures to increase the capturing of microplastics
- Textiles, including measures to achieve high levels of separate collection of textile waste
- Construction and buildings, including measures to integrate life-cycle assessment in public procurement
- Food, water and nutrients, including measures on food waste reduction



#### d. Incentives for the promotion of circular economy

The transition towards circular economy is hindered by the presence of the linear markets, investment tools and practices. These obstacles prevent the economy from identifying the real cost of the production of goods and services, integrating the environmental and social costs.

The EU is too dependent on the import of resources and new materials, that have been extracted, traded, produced in countries where the competition rules are distorted by huge state intervention (e.g. China) or by exploitation of the workers (e.g. South Africa). Only 12 % of the materials in the EU comes from recycling.

In order to strengthen the transition from a linear to a circular economy, the regional and local authorities can define several incentives. An incentive is any type of instrument, set up by financial or non-financial policy makers with the goal to stimulate the circular economy. These incentives can be temporary (e.g. market creation) or permanent (e.g. laws, regulation and standards).

As to the financial instruments, they are defined in function of the maturity of the market context (from an absent market to a mature market). Hereby different kinds of instruments can be defined, like incentivising instruments or de-risking instruments.

As to the non-financial policy instruments, three types can be identified:

- The market based instruments, that convert the environmental benefits in to an real economic return, like tax differentiation
- The non-market based instruments, like the ban of single-use products when circular alternative products exist, or like the design requirements in order to improve the product reparability
- Removing of normative obstacles, like the facilitation of the shipments of waste within the EU, or like the definition of procurement criteria that are rewarding the use of circular products and services.

This a long-lasting process and the incentives need to be monitored and reviewed in function of the market conditions. The incentives should ensure that the circular choice is always the best financial choice, as well as to avoid market regression to linear products and raw materials.





## 4. Circular economy within an EU perspective

### a. Circular economy and the EU – policy framework

In 2019, the new European Commission has launched a European Green Deal. As Europe is threatened by climate change, environmental degradation, several pandemics, warfare and distortion of competition by Asian partners and global multinationals, destroying the innovative power of the SME's, the new EU Commission declared its ambition to become the first climate neutral and resource-efficient continent in the world by 2050, ensuring :

- no net emissions of greenhouse gases by 2050
- economic growth decoupled from resource use
- no person and no place left behind

A key pillar in this European Green Deal strategy is the structural development of the Circular economy policy within the EU.

The attention for the Circular Economy within the EU is not new. In 2015, the EU Commission has adopted its first Circular Economy Action Plan for a cleaner and more competitive Europe. The Action Plan mapped out 54 actions, as well as four legislative proposals on waste. Moreover, the Action

Plan included targets for landfill, reuse, and recycling, to be met by 2030 and 2035, along with new obligations for separate collection of textile and biowaste. The Action Plan covered several policy areas, material flows, and sectors alongside cross-cutting measures to support this systemic change through innovation and investments. It also announced a sectoral strategy for plastics.

In March 2020, the European Commission launched a new Circular Economy Action Plan. This action plan aims to turn the circular economy into a mainstream concept and disconnect economic growth from the use of resources. Optimising the circular use of resources throughout the economy is a key vector for minimising the environmental impacts of the EU economy. It makes environmental and economic sense and contributes to climate mitigation and renewing EU industrial global leadership. The co-benefits of achieving carbon neutrality in a wider resource efficiency agenda should contribute to meeting this goal in a faster and cost-efficient manner. Coupled with the possibilities of digitalisation and data analysis, a circular economy creates space for new business models and enables the optimisation of energy and resource use throughout the full life cycle.

The new plan includes several initiatives, that are related to the whole life cycle of products: redefining product design, reorganisation of circular economy processes, fostering sustainable consumption, and ensuring that the resources are kept in the EU economy as long as possible. The new plan consists of 35 measures, including legislation, and some targeting areas:

- circular products should become the norm within the EU
- empowerment of consumers and public buyers
- focus on sectors that use the most resources: construction, batteries, packaging, plastics, food, etc
- make circularity work for people, cities and regions



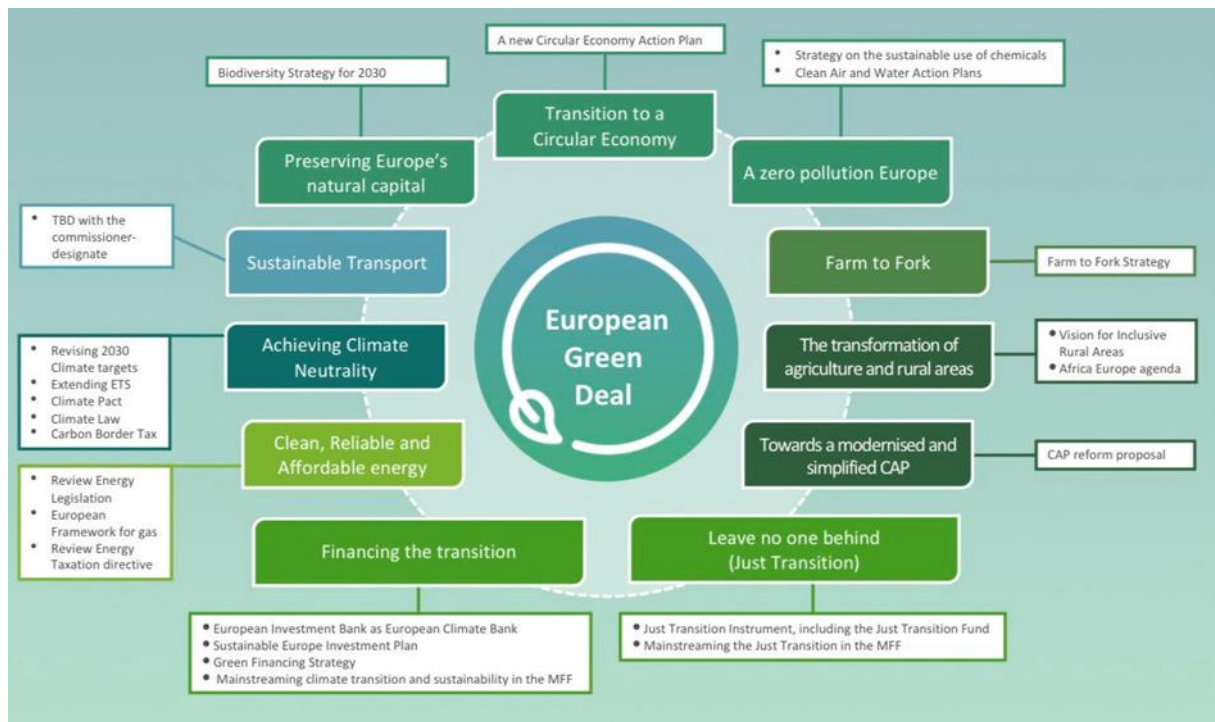
## b. Circular economy and the European Investment Bank

In order to realise this action plan, the EUROPEAN INVESTMENT BANK (EIB) plays some role.

Between 2015 and 2019, the EIB has financed very traditional recycling projects as well as the first innovative business models. It is the goal of the EIB to promote the efficient use of resources. It is therefore important to screen and to assess the circular economy projects. Therefore a list of circular economy categories have been defined:

- circular design and production models
- circular use models
- circular value recovery models
- circular support

This will be combined with the necessary risk assessments.





### c. Circular economy in the North Sea Region

The North Sea Region is a macro-region with highly specialised industries based on top quality research and access to a wide range of resources and a well-skilled workforce. The region aims to remain a leading, competitive, attractive and socially sustainable region. Growth in the North Sea Region must be based on sustainable resource use and on circular economy principles, as well as taking full advantage of digital economy opportunities. A strong involvement of civil society and cooperation with citizens will also empower the North Sea Regions to find place-based solutions for societal challenges. Key topics and goals of the NSC by 2030 are:

- Unlocking the potential of smart specialisation strategies and economic diversification, ensuring viable jobs in all parts of the region and new and innovative industries, based on marine resources, sustainable energy, sustainable tourism, circular economy and digitalisation.
- Reach high employment rates thanks to high innovation capacity, where the skills/competences and mobility of researchers, students and the workforce are fully exploited, together with a successful inclusion of migrants and other disadvantaged people.
- Circular use of resources and circular economy methods and techniques are widely adopted. Economic growth, based on sustainability and climate change mitigation, should be among the highest in Europe.



## 5. Circular economy and governance

### a. Circular economy and network governance

The transition from a linear to a circular economy is a collective process: not only the organisation of neighbourhoods, cities or regions are affected, but also the interactions between governments, producers and consumers. This process does not happen by itself: it requires a new form of governance, in which these different stakeholders align and cooperation in order to promote the transition from a linear to a circular economy. This is called network governance.

A transition broker might be required in order to organise the alignment of the visions and the set-up of the cooperation in order to steer the change process.

Goal-oriented network governance is crucial in order to provoke a complex system change.

The importance of network governance is very underestimated and not understood. Some of the stakeholders are having doubts about their responsibilities within their network, or they hesitate about the democratic validity of the concerned transition processes. Moreover, some relationships between stakeholders have been institutionalised in the past, which hampers them to reconsider their position in function of the transition process;

The network governance, as one of the tools to realise the transition from a linear to a circular economy, will only succeed, when all the stakeholders redefine their roles and responsibilities. Moreover, it is important that all the stakeholders can benefit; therefore the new circular business models should be based upon new revenue models.

Network governance can be developed in a better way in a consensus-oriented society, lead by a pluralistic government.



b. Circular economy, network governance and public governance

Network governance needs to be supported by a transparent public governance, whereby the European/national government is defining the framework of the circular economy policies, to which all stakeholders within the network commit themselves.

On the other hand, the European/national government is part to the stakeholders, building the goal-oriented network.

Public governance refers to the conventional role of the government, as the guard of the global common goods.



