Circular Economy Concepts

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Note for the translator: the words in [] are to be left out and the students should be able to find the right words. In your languages there might be multiple right answers. Take that into consideration when translating this text. Several right English language answers are separated by slash (/)

Ellen MacArthur is a British racing sailor. She holds the women's record of sailing solitarily around the world. While sailing, MacArthur felt strongly that the sailboat was her whole world. As the boat had been optimised for speed the size of the boat limited the amount of goods that could be packed onboard and used during the voyage. MacArthur has compared the reality of the bout to the limited resources of the Earth. Humanity has certain resources, which must be enough for us and for the future generations. Realising this was the starting point of Ellen MacArthur foundation. The foundation works with corporations, governments, and universities in order to construct a frame for a new economic model, which could replace the traditional linear economic model (acquiring resources – industrial production – further production of products – delivery – use – disposal). The mission of Ellen MacArthur foundation is to accelerate the transition to [circular economy / a circular economy].

Onboard the sailing boat she also had to think about what happens to the products after they are used. In a circular economy, the life cycle of the products is seen as a circle instead of the traditional linear production model. Materials and products are made durable, and the longevity of use is maximised. When a product is worn out its materials and packaging are utilised in new products. The aim is to use materials and other resources, such as work, space, and the offerings of nature, as effectively and wisely as possible. In a circular economy, losses during the life cycle are minimised and to get completely rid of [waste / rubbish/trash].

According to the so-called [cradle to cradle / cradle-to-cradle] school of thought, circularity into new materials and products is taken into account already in the design phase. The products should not include anything that cannot be reused as a product, part of a product, or resource.

The [cascade / cascading] principle refers to prioritising the different uses of resources. Materials should primarily be used in products with high added value before reusing the materials or using the material for energy. For example, wood is first utilised in high products with high value, which can later be reused and recycled. The very last option is to burn wood to produce energy. In this way, more added value is produced with less input and cost savings, better competitiveness can be achieved, and negative environmental effects can be reduced.

[Greenhouse emissions / carbon emissions / CO2 emissions] refer to CO_2 emissions caused by human actions. Following the principles of a circular economy leads to reduction of CO_2

emissions. It has been estimated that even more than 50 % of the carbon dioxide emissions are related to the management and logistics of materials and the production of material products.

[Resource effectiveness] describes actions which aim at reducing the environmental load of production and consumption. This means rational use of materials, avoidance and reduction of rejection and waste, applying precautionary principle, and prevention of the end of natural resources. The added value is pursued with the least material input.

[Resource wisdom] is an even more holistic approach. It is the capacity to use natural resources, raw materials, energy, products, services, space, and time with consideration, and promoting well-being and sustainable development. Actions are assessed in societal context, i.e. the use of resources aims at good on a systemic level, instead of searching for the best outcome from the point of an individual product or activity.

In a circular economy, consumption is based on sharing and using services instead of ownership. [Sharing economy] is a new way to think about the economy. Buying and owning utilities, services or other commodities is not essential, but sharing them to fulfil the needs of several companies or individuals is. One way to organise the sharing economy is through various digital platforms and applications which enable sharing. That can be called [platform economy].

In the best cases, companies can produce economically viable, high degree of processing in mutually beneficial collaboration. [Industrial ecosystem / industrial symbiosis] is a model in which companies cooperate providing added value to each other. They effectively utilise each other's side streams, technologies, competences, and services. The side streams or waste of one producer can be a profitable resource for another partner, which saves costs and collectively reduces negative environmental impacts.

Mere company co-operation is not enough, though. Networks of different actors, like corporations, researchers, educators, innovators, and public administration, collaborate over sectoral borders to create new kinds of products and services and in order to develop new competences and resources. This kind of network already exists around food waste. A restaurant sells the customer food via a mobile application, which has been developed by another actor and is maintained by still another. The customer pays by mobile payment. Possibly another actor delivers the food adding new actors in the network. These kinds of networks are [business ecosystems].

Climate change is reality. Natural resources are diminishing, and we have to learn to mitigate our actions to the limits of the Earth's carrying capacity like Ellen MacArthur adapted to the conditions of the sailboat. Humanity has to find ways to operate in changing conditions, to face problems and crises, and to recover from them. We need [resilience] - flexibility and abilities to stretch and recover instead of shutting the eyes from change and believing in the prevalence of present conditions.

Circular economy promotes sustainable use of natural resources by decreasing the use of virgin resources and furthering resource efficient and resource wise solutions and systems. A sustainable society does not produce more carbon dioxide emissions than it can [sequestrate / bind / capture through photosynthesis]. This kind of society is [carbon neutral].

The [Earth overshoot day / overshoot day] is the date when the calculated ecological footprint of humanity exceeds the yearly biological capacity of the world to produce renewable resources and process greenhouse gases from the uses of fossil fuels. This day is one way to demonstrate how humanity uses more resources than it could afford.