

2. Sustainable development and circular economy

*Anna Laska-Leśniewicz, Monika Malinowska-Olszowy
Lodz University of Technology, Poland*

2.1. Sustainable Development

Sustainability has become a popular term in recent years. It can be understood as meeting our own needs but with respect of future generations that should be able to meet their needs as well. According to the UCLA Sustainability Committee, sustainability is defined as:

the integration of environmental health, social equity and economic vitality in order to create thriving, healthy, diverse and resilient communities for this generation and generations to come. The practice of sustainability recognizes how these issues are interconnected and requires a systems approach and an acknowledgement of complexity [1].

The issue connected with sustainability was mentioned some decades ago – for example in the National Environmental Policy Act of 1969 from the United States sustainability was declared a national policy:

to create and maintain conditions under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic and other requirements of present and future generations. [2].

Nowadays, the global and urgent aim is to provide sustainability and sustainable development. Sustainable Development can be defined as ‘development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs’ (definition published in the Brundtland Report, also known as Our Common Future, in 1987 by the United Nations) [3].

There are three pillars of sustainable development:

- Environment (environmental sustainability),
- Economy (Economic sustainability),
- Society (Social sustainability).

In order to know the directions and act in sustainable way, sustainable development goals (SDGs) were designed and intended to be achieved by 2030.

2.2. Sustainable Development goals

The Sustainable Development Goals (SDGs, known also as Global Goals) are the plan to achieve a better and sustainable future for all people. SDGs were created and accepted in 2015 by the United Nations. At the UN summit in New York, the document entitled ‘We are transforming our world: Agenda for Sustainable Development – 2030’ was signed [4]. It contains 17 goals of sustainable development which are to guide both governments and various types of organizations (international and non-governmental), universities, science, business and citizens. All SDGs address the global challenges we face, including poverty, inequality, climate change, environmental degradation, peace and justice. Sustainable Development is primarily aimed at equalizing the standard of people’s lives, so that every person has a chance for a dignified and safe life.

The SD goals set are focused on 5 areas: people, planet, prosperity, peace, partnership. The goals are presented in Figure 2.1. and they include such aspects as: (1) poverty in all its forms, (2) hunger, food security, nutrition and promotion of sustainable agriculture; (3) healthy lives and promotion of well-being for all; (4) inclusive and equitable quality education; (5) gender equality; (6) availability and sustainable management of water and sanitation; (7) access to affordable, reliable, sustainable and modern energy; (8) inclusive and sustainable economic growth; (9) sustainable industrialization and innovation; (10) reduction of inequality; (11) sustainable cities and communities; (12) responsible consumption and production; (13) actions combating climate change; (14) sustainable use of the oceans, seas and marine resources; (15) sustainable use of terrestrial ecosystems; (16) peaceful and inclusive societies for sustainable development, access to justice and inclusive institutions at all levels; (17) global partnerships for sustainable development.

Check *GreenTEX Handout – Sustainable Development Goals*
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SUSTAINABLE DEVELOPMENT GOALS



Figure 2.1. Sustainable Development Goals

Source: United Nations, *The 17 goals*, online <https://sdgs.un.org/goals> (access: 30.09.2022).

2.3. The essence of circular economy

The concept of a circular economy refers to a system whose main purpose is to minimize the consumption of raw materials, the amount of waste and the consumption and loss of energy. This can be achieved by creating process loops, i.e. waste from one process is treated as valuable raw material for other processes. As a result, this leads to a reduction in the overall amount of waste and emissions that have an impact on the environment. Circular system is a closed loop, where one aspect flows smoothly into the next. The individual items should be broken down as follows [5]:

- Raw material – raw materials and design;
- Product – production, distribution, consumption;
- Waste – consumption and collection.

There is still recycling, which we will not include in any category, because it is an activity that is a superior function in circular economy.

Check *GreenTEX Handout – Circular Economy Model*
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2.4. Circular economy model

The most popular model of circular economy is the so-called ReSOLVE approach developed by the Ellen MacArthur foundation. It is a concept that presents six business lines of action for companies that strive to implement the principles of the circular economy. The term ReSOLVE was created as an abbreviation of the following words: Regenerate, Share, Optimize, Loop, Virtualise and Exchange. According to him, activities under business models can be classified in the following areas [6]:

- Regenerate – all activities aimed at restoring, preserving and repairing the quality of ecosystems, as well as returning recovered biological resources to the biosphere;
- Share – sharing resources between different users, e.g. in the form of sharing private products by multiple co-owners or public use of a certain group of products, by reusing them during their entire technical lifetime and by extending their lifetime by maintaining, repairing and designing for durability;
- Optimize – increasing the performance of a given product, eliminating waste in the production and supply chain at all stages of the cycle;
- Loop – Keeping ingredients and materials in closed loops and giving priority to inner loops means reusing products or ingredients in manufacturing and recycling materials;
- Virtualize – dematerialization of resource use by providing a given functionality in a virtual way: directly or indirectly;
- Exchange – replacing old non-renewable materials with advanced materials, using new technologies or new forms of services.

2.4. Sustainable Development and Circular Economy in Textiles

One of the basic elements of the concept of sustainability is a circular economy with a closed cycle for textiles, apparel, footwear and accessories. To be considered sustainable, brands must improve every aspect of the products' life cycle [7]:

- Production (use of new manufacturing technologies and alternative materials to reduce water and energy consumption);
- Logistics (increasing the reusability/recyclability/composability of packaging);
- Sales and marketing (introducing clear labelling describing product composition and origin);
- Product use (looking for green material technologies to increase durability and usability, resistance to external factors);
- Elimination of textile waste;
- Design (incorporating sustainable fashion principles into the design process of innovative products that minimize environmental and social impact);
- Procurement of raw materials (sourcing eco-friendly raw materials – raw materials, dyes, finishing elements for production).

Another mean of completing sustainability tasks and validating actual practices is to obtain specialized certifications that validate company's overall social and environmental performance. The main challenges facing companies are the investment required to develop new business models, the impact of change on business profitability, employee education and culture change in organizations, maintaining credibility, consistency of brand image and reputation. These necessary changes are contained in the EU Strategy for Sustainable and Circular Textiles, announced by the European Commission on March 30, 2022. The document states that by 2030, textile products placed on the EU market must be sustainable and recyclable, mostly made of recycled fibers, free of hazardous substances, and produced with respect for social and environmental rights.

The strategy includes a broad spectrum of actions necessary to adapt the textile ecosystem to achieve sustainable production and consumption. Simultaneously, these actions will ensure that the industry will remain competitive, innovative, and resilient to crises. The aim is to reform the EU textile sector in a short period of time while ensuring that it becomes a global pioneer in transforming the sector's value chains into circular, innovative, transparent and environmentally friendly ones. The strategy also draws

attention to the deliberate destruction of unsold products. To discourage such practices a:

transparency obligation is to be introduced, under which large companies will have to publicly disclose the number of products they discard and destroy, including textiles, and their subsequent treatment in preparation for reuse, recycling, incineration or landfill [8].

The legislation is also expected to oblige manufacturers to provide reliable information on textile products sold on the EU market. Amongst others, the Digital Product Passport will be introduced to support this goal.

Extra readings

1. United Nations, SDG knowledge. <https://sdgs.un.org/goals> (access: 20.10.2022).
2. Recycle Track Systems, Guide about Circular Economy: What is it + how does it work? <https://www.rts.com/resources/guides/circular-economy/> (access: 20.10.2022).

References

1. UCLA Sustainability Committee, UCLA Sustainability Charter, online <https://www.sustain.ucla.edu/what-is-sustainability/> (access: 30.09.2022).
2. United States Environmental Protection Agency (EPA), National Environmental Policy Act, online https://www.energy.gov/sites/default/files/nepapub/nepa_documents/RedDonutReq-NEPA.pdf (access: 30.09.2022).
3. Brundtland G.H., Our Common Future: Report of the World Commission on Environment and Development, UN-Dokument A/42/427, Geneva 1987.
4. UN General Assembly, Transforming our world: the 2030 Agenda for Sustainable Development, A/RES/70/1.2015, online <https://www.refworld.org/docid/57b6e3e44.html> (access: 04.11.2022).
5. Kirchherr J., Reike D., Hekkert M., Conceptualizing the Circular Economy: An Analysis of 114 Definitions, Resources, *Conservation&Recycling* 2017, no. 127, pp. 221–232.
6. Rutkowska M., Popławski Ł., Model zrównoważonej gospodarki o obiegu zamkniętym, problemy teoretyczne i metodyczne, *Studia i Prace WNEIZ US* 2017, no 47/2, p.122–123.
7. Rudnicka A., Koszewska M., *Uszyte z klasą*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2020.

8. Szymkiewicz N., Co to jest strategia tekstylna UE i jakie są jej założenia?, online <https://portalochronysrodowiska.pl/ochrona-powietrza-i-akustyka/co-to-jest-strategia-tekstylna-ue-i-jakie-sa-jej-zalozenia-2030.html> (access: 23.07.2022).