



Circular Economy, Education for Sustainable Development and Green Skills: T(h)REE Elements for a Better Future

Carlotta Maria Crippa¹, Vida Drąsutė²

VšĮ "eMundus", Lithuania¹

Kaunas University of Technology, Lithuania²

Abstract

Climate change, global warming and the increasing pollution level of water, land and air are sending us a clear signal: our linear economic model, which consists of taking raw materials, consuming them, and throwing them away, has become unsustainable for Earth and for human beings [1]. That is why, over time, people around the world have started to look for economic models that are more sustainable from the social, environmental, and economic point of view. In this context, the European Union, together with many other international and national organizations, is promoting an alternative economic system designed to regenerate itself, called Circular Economy (CE). The CE can help our society to reach the Sustainable Development Goals and change the way we produce and consume goods [2]. This shift toward a more sustainable economic model is having an impact also on the job market, as new activities and jobs linked with the CE are starting to appear, and on the education system [3], as the importance of the Education for Sustainable Development (ESD) and of the green skills is rising. All these topics are addressed within the article. In fact, at first the article clarifies what CE and sustainability are, providing the reader with an overview of the green skills and how all these elements can affect the job market. Secondly, the results of the transnational research carried out by the partners of the Erasmus+ project TREE [4] are presented. The research was carried out from January to April 2022 through questionnaires and interviews in Lithuania, Bulgaria, the Netherlands and Estonia. The research aimed at collecting information from Vocational Education and Training teachers, green companies, and NGOs active in the environment protection field about the CE, the green skills and their importance for the job market. In conclusion, the article reasserts the importance of CE and the future perspectives for VET schools.

Keywords: Circular Economy, sustainability, VET education, green skills

1. A new economic paradigm: the Circular Economy (CE)

1.1 The main characteristics of the CE

In order to clearly understand what Circular Economy (CE) is, it is necessary to describe its opposite, which is the linear economic system, which is currently in place in our society. The linear economy model consists of 4 phases: the production of goods from raw materials, that are then distributed to costumers and used by them and, finally, thrown away [5]. The main limits of this economic model are the high demand for raw materials and energy, and the pollution resulting from the production of new products and from the disposal of old products that have become waste [6]. Because of the so-called "planned-obsolescence" [6] of good, according to the European Parliament (EP), each European consumes an average of 14 tons of raw materials (such as water, wood, energy, etc.) per year and produces 5 tons of waste [7]. All of this leads us to consume more resources than the Earth can reproduce, which is why the linear economic system has come under fire [1, 5]. It is in this context that the concept of CE has been developed. The CE is "a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible" [7]. It is based on three main pillars: to eliminate waste and pollution; to regenerate the nature and to extend as much as possible the lifecycle of products and materials [2]. In addition to the ones for the environment, other benefits related to this economic model are listed in The Circular Economy Action Plan, which mentioned among the others: strengthen of the EU's industrial base, foster businesses creation, high-quality, functional and safe products which last longer and are designed to be easily repaired, reused or recycled [8].



1.2 The green transition's effects on the job market

The International Labor Organization (ILO) has made several research in the field of CE, green transition, and their effects on the job market. In 2019, ILO estimated that almost 25 million jobs will be created around the world thanks to the transition to a greener economy and nearly 7 million will be lost for the same reason [9]. According to the report, *“of the 7 million lost jobs, 5 million can be reclaimed through labor reallocation, while around 2 million will require reskilling in other occupations”* [9]. This is why it is so crucial to start allocating funds for systematic upskilling and reskilling programs, in order to cope with the worldwide shortage in skills for green jobs, i.e. the so-called “green skills”. The Cedefop defines the green skills as *“the knowledge, abilities, values and attitudes needed to live in, develop and support a sustainable and resource-efficient society”* [10]. According to the Green General Skill index, there are four groups of work tasks that are particularly important for green jobs: engineering and technical skills (such as eco-design, green construction, assessment of technology, etc.), science skills (such as physics and biology), operation management skills (such as life-cycle management and lean production) and monitoring skills, which refers to *“skills required to assess the observance of technical criteria and legal standards”* [11]. Together with this set of hard skills, a range of soft skills is considered fundamental to sustain the shift toward a greener economy, such as creativity, design thinking, resilience, empathy, and adaptability [12]. In 2019, the green hiring rate overcomes the overall hiring rate in most of the countries around the world, which means that green-skilled workers were hired more frequently than non-green skilled ones [13].

1.3 The Education for Sustainable Development (ESD) in VET system

The European Union (EU) openly recognizes the essential role played by Vocational Education and Training (VET) in the European education and lifelong learning systems and addresses its crucial role in filling the widening skills gap in the EU labor market. In fact, the EP has stated that the VET system is supposed to provide people with skills for *“work, personal development and citizenship”* [14], supporting them in coping with changes caused by the digital and green transitions. Moreover, the European Commission highlights the importance of teaching and learning new skills as they will play a key role in the transition to the green economy, according to The New Circular Economy Action Plan and the EU biodiversity Strategy for 2030 [14]. In this regard, the conclusions of the Cedefop report (2019) [16] are particularly interesting, as it pointed out that in Europe there is no common definition of the green skills and green jobs and countries significantly vary their approach toward these issues. This data reveals the need for a coherent policy on green skills and jobs, in order to harmonize the countries' efforts toward a CE. In order to do so, at educational level, it is fundamental to systematically integrate in all the curricula the Education for Sustainable Development (ESD) principles. The ESD aims at integrating key sustainable development issues, such as climate change, sustainable production and consumption, and biodiversity within the teaching and learning process [15]. This is particularly relevant for VET schools, given their close ties to the job market and their possible role as drivers of change toward a greener economy.

2. The TREE project

In the framework of the Erasmus+ TREE Project [4], a transnational research was carried out by project's partners from Lithuania, Bulgaria, the Netherlands and Estonia, with the aim of collecting insights from VET teachers and from members of NGOs and green companies on CE, ESD and green skills. Since the data recounted in Estonia are not yet available in their final version, they will not be included in this paper, which is therefore to be considered a partial, but still reliable, version on the topics covered. A total number of 88 people were involved in the research (52 VET teachers, 12 NGO and 24 companies' members).

In the Netherlands both members of companies and NGOs and teachers said they were familiar with the concept of CE and in most cases had a sustainability implementation plan in their organizations. The case of Lithuania and Bulgaria is different because companies and NGOs, despite their familiarity with the concept of CE (declared by about 90%), do not show the same level of awareness on ESD. What emerges is that the world of sustainability and circularity in these two countries still seems separate from the world of education. In all three countries, respondents implement "green" practices at work and in their personal lives, such as waste sorting, avoiding plastic cups/bottles, organising campaigns to promote recycling activities and using public transport.

When asked about which green skills are more relevant for the job market, most respondents consider them important/very important for the job market, but there are differences on the most relevant green skills depending on the country considered and the category of respondents.



In Bulgaria, there are some discrepancies between the skills considered most important by NGOs and companies and VET teachers. On one hand, NGOs and companies indicate as "very important" for the labour market the following skills: monitoring, management, impact quantification, life-cycle management, maintenance and repair, science, waste management, environmental auditing. On the other hand, according to teachers it is sufficient a basic knowledge on these topics, as their importance for the job market is limited compared to other skills, such as creative problem-solving and forward-thinking.

In Lithuania and in the Netherlands there is greater agreement among respondents on green skills. In Lithuania, the results of the survey show that the most important green skills (according to more than 50% of respondents from VET institutions, companies and NGOs) are waste management, pollution prevention and smart-thinking. In the Netherlands, people declared some of the most relevant ones are re-using skills, cooperation, sharing, openness to change.

3. Conclusions

The green transition and green skills are becoming increasingly important to the economy, the environment and our lives. It is therefore of paramount importance to begin promoting the acquisition of green skills in VET centers. To do this, ESD principles must be integrated into VET school curricula and teaching methods. In addition, strengthening the link between companies, NGOs and VET centers would create a virtuous circle for promoting sustainability and would ensure a higher responsiveness of what is taught in schools to the needs of the labor market.

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