

інтегрувати компетентнісний підхід, що сприятиме практичному засвоєнню знань та розвитку навичок, актуальних для ринку праці.

Таким чином, трансформація управління освітою у період воєнного стану потребує стратегічного бачення, комплексного підходу та міжнародної підтримки. Інтеграція безпекових заходів, розвиток цифрової інфраструктури, підтримка педагогічного складу та ефективне фінансування дозволять мінімізувати негативні наслідки війни для освітньої системи. Лише через консолідацію зусиль держави, міжнародних організацій та громадянського суспільства можливо забезпечити стійкість освіти та створити фундамент для її подальшого розвитку, враховуючи інноваційні технології та адаптивні стратегії управління.

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## **ROLE OF THE CIRCULAR ECONOMY IN THE RECONSTRUCTION OF UKRAINE**

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**Introduction.** From a conceptual point of view, the circular economy is a system where materials never become waste and nature is regenerated. In a

circular economy, products and materials are circulated through processes like maintenance, reuse, refurbishment, remanufacture, recycling, and composting. The circular economy tackles climate change and other global challenges, like biodiversity loss, waste, and pollution, by decoupling economic activity from the consumption of finite resources [1].

The circular economy is based on three principles, driven by design:

- Eliminate waste and pollution
- Circulate products and materials (at their highest value)
- Regenerate nature

Today's economy operates on a system of extracting raw materials from the Earth, which are then processed to make products. Once used, much of this waste ends up in landfills or incinerators (First Principle). The idea is to recycle this waste in such a way as to obtain the maximum benefit from it and extend its use as much as possible (Second Principle). The third principle of the circular economy seeks to regenerate nature, since the less raw materials are extracted, the more time nature has to regenerate.

Since its start, the circular economy has always aimed at yielding holistic environmental, economic and social benefits. In Ukraine's context of war and economic uncertainty, a circular economic model can be used as a means to recover and stabilize the economy, while at the same time ensuring compliance with European regulations [2].

### **The main support of the circular economy in Ukraine**

The circular economy can play a very important role in Ukraine's economic recovery by supporting industrial development from different perspectives; some of them are the following [2]:

- Resource efficiency: Circular economy practices aim to optimize resource use by promoting reduced consumption, recycling, refurbishing, and remanufacturing. This reduces virgin material consumption and minimizes waste generation.

- Enhanced resilience: Diversifying supply chains through circular economy practices can enhance the resilience of industries by reducing dependence on scarce resources and minimizing the impact of price volatility.

- Job transformation and creation: The transition to a circular economy often requires new business models, technologies, and skills. This can result in the creation of new jobs in areas such as recycling, remanufacturing, and waste management.

- Innovation: Circular economy approaches encourage innovation in product design, manufacturing processes, and business models. This can lead to the development of sustainable and environmentally friendly technologies.

- Cost savings: Adopting circular economy principles can generate cost savings for industries. Recycling and reusing materials can be more cost-effective than extracting and processing virgin resources.

- Environmental conservation: By reducing the demand for virgin materials, limiting pollution, and decreasing the need for landfill waste, the circular economy contributes to environmental conservation and helps address climate change.

- Social benefits: Circular economy practices can have positive social impacts if they are designed with this in mind, such as improved community well-being, better waste management practices, and reduced environmental pollution.

### **Important challenges to implementing circular economy in Ukraine**

However, despite the opportunities, Ukraine currently faces several challenges in implementing a circular economy model. These include aspects like: policies, waste infrastructure, material efficiency across sectors, and uptake of circular business models throughout the economy [2]. Some of the policies that do not leverage a circular economy model are: No comprehensive strategy for transitioning to a circular economy in Ukraine; limited or nonexistent sectoral circularity objectives or regulation, particularly for the construction sector; fragmented inter-ministerial/agency/municipal collaboration; and Lack of a coordinated approach for monitoring waste statistics.

Regarding waste infrastructure, Ukraine lacks reliable statistics and data on waste management in general, making it difficult to obtain a complete picture of reuse, recycling, and disposal rates in the country; the war exacerbated this situation.

Regarding material efficiency in various sectors in Ukraine, low efficiency remains a major challenge. Currently, material efficiency in Ukraine is low: a recent UNIDO study points to above-average CO<sub>2</sub> emission intensity in the manufacturing sector, as well as above-average raw material consumption intensity compared to neighboring European Union countries and even Turkey [3]. Finally, uptake of circular business models throughout the economy; nevertheless, challenges persist for Ukrainian firms transitioning towards sustainable business models. The main challenge is access to financing. The main barriers include high interest rates, collateral requirements, and documentation processes.

### **Priorities sectors to implement circular economy in Ukraine**

According to a study conducted by UNIDO in 2024, the three most important sectors for implementing the circular economy in Ukraine are: The Manufacturing sector, and in particular the Electrical and machinery, Food and beverages, and Metal products subsectors, which emerges as the clear priority sector to implement circular economy solutions, driven primarily by its low CO<sub>2</sub> efficiency per unit GDP and high material footprint. Agriculture, forestry, and fishing; The prioritized subsectors include the production of grain, wheat, and maize as well as ruminants. The sector is still too reliant on fossil fuels, such as gas and oil, to operate. It needs to boost alternative energy sources, notably by tapping into its huge biomass potential, as well as turn to developing local, organic fertilizer to reduce its dependence on imports. The third most important sector is the construction sector, which has a poor CO<sub>2</sub> efficiency as well as a high material

import dependency, suggesting that there is potential to start using alternative materials in the sector, notably to lower the dependency on nonmetallic minerals.

### **Final comments**

The circular economy presents a valuable opportunity for Ukraine to recover and stabilize its economy while aligning with European regulations. It can drive industrial development by optimizing resource use, enhancing resilience, creating jobs, fostering innovation, generating cost savings, conserving the environment, and delivering social benefits. However, successful implementation requires addressing challenges related to policies, waste infrastructure, material efficiency, and the adoption of circular business models. Prioritizing sectors like manufacturing, agriculture, and construction is crucial for maximizing the impact of circular economy initiatives in Ukraine.

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## **ОСВІТНІ ПРОГРАМИ ТА ПЕРЕПІДГОТОВКА СПЕЦІАЛІСТІВ ДЛЯ ВІДНОВЛЕННЯ ЕКОНОМІКИ**

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Війна в Україні спричинила значні втрати у сфері освіти та ринку праці, що потребує комплексного підходу до відновлення освітньої інфраструктури та підготовки спеціалістів для ключових галузей економіки. Освіта відіграє вирішальну роль у процесі відновлення країни, оскільки