**PROBLEMY EKOROZWOJU – PROBLEMS OF SUSTAINABLE DEVELOPMENT**
**SUBMITTED: 29.03.23, ACCEPTED: 28.06.23, PUBLISHED ON-LINE: 8.01.24**
**2024, 19(1): 232-250**
**https://doi.org/10.35784/preko.5760**

# Achieving Sustainable Development Goals in Conditions of Rational Expectations by Achieving a Balance of Interests of Education and Production in the Field of Light Industry During Troubled Times of Pandemic and War

## Osiąganie celów zrównoważonego rozwoju w warunkach racjonalnych oczekiwań poprzez osiągnięcie równowagi interesów edukacji i produkcji w zakresie przemysłu lekkiego w trudnych czasach pandemii i wojny

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**Abstract**

The article presents a comprehensive analysis of the global consequences caused by the development of light industry for achieving the Sustainable Development Goals. The ecological context allows us to focus on how light industry affects climate change, resource depletion, waste generation and water pollution. It is emphasized that the impact of light industry can create significant challenges for sustainable development related to SDG 13 (Climate action), SDG 6 (Clean water and sanitation), SDG 12 (Responsible consumption and production), SDG 14 (Life below water) and SDG 15 (Life on land). The article also examines the socio-economic context, discusses how light industry leads to persistent inequality, loss of traditional skills and cultural heritage, as well as trade imbalance. In terms of social responsibility, light industries have a history of violations of working conditions and labour rights. The socio-economic impacts considered may hinder the achievement of SDGs such as SDG 5 (Gender equality), SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 10 (Reduced inequalities), SDG 11 (Sustainable cities and communities) and SDG 12 (Responsible consumption and production), SDG 17 (Partnerships for the goals).

The theory of rational expectations is used to predict the development of light industry and its subsequent impact on sustainable development in the post-pandemic period. The prospects of applying the theory in the training of specialists for light industry are substantiated. The impact of the consequences of the pandemic and the war in Ukraine on the decision-making processes in light industry and their alignment with the sustainable development goals, taking into account civilizational challenges, is considered.

In the process of research, an econometric model has been developed to determine the desired balance of interests between education and production based on rational expectations in a sustainable development environment. It advocates harmony between these two aspects, based on rational expectations, to promote sustainable development. This balance is crucial for achieving SDG 4 (Quality Education), SDG 9 (Industry, Innovation and Infrastructure) and SDG 17 (Partnerships for the goals). The properties of the model provide a wide range of applications, allowing to estimate the impact of a variety of factors on sustainable development in light industry. The developed model can be applied to estimate the values of the dependent variable for individual countries or regions, as well as to analyse the influence of independent and control variables on changes in its value. As a planning tool, the model can be adapted to develop context-sensitive sustainability strategies in light industries. The article offers ideas and practical solutions for using the potential of light industry in the pursuit of sustainable development in conditions of rational expectations.

**Key words:** sustainable development; Sustainable Development Goals; production; light industry; education; rational expectations; econometric model

## Streszczenie

W artykule przedstawiono kompleksową analizę globalnych konsekwencji rozwoju przemysłu lekkiego w kontekście osiągania Celów zrównoważonego rozwoju środowiskowego. Kontekst ekologiczny pozwala nam skupić się na wpływie przemysłu lekkiego na zmiany klimatyczne, wyczerpywanie się zasobów, wytwarzanie odpadów i zanieczyszczenie wody. Podkreśla się, że wpływ przemysłu lekkiego może stworzyć istotne wyzwania dla zrównoważonego rozwoju związane z SDG 13 (Działania klimatyczne), SDG 6 (Czysta woda i kanalizacja), SDG 12 (Odpowiedzialna konsumpcja i produkcja), SDG 14 (Życie pod wodą). i SDG 15 (Życie na lądzie). W artykule dokonano także analizy kontekstu społeczno-gospodarczego, omówiono, w jaki sposób przemysł lekki prowadzi do utrzymujących się nierówności, utraty tradycyjnych umiejętności i dziedzictwa kulturowego, a także nierównowagi handlowej. Jeśli chodzi o odpowiedzialność społeczną w kontekście przemysłu lekkiego, odnosi się ona do naruszeń warunków pracy i praw pracowniczych. Uwzględnione skutki społeczno-gospodarcze mogą utrudnić osiągnięcie celów zrównoważonego rozwoju, takich jak cel zrównoważonego rozwoju 5 (równość płci), cel zrównoważonego rozwoju 8 (godziwa praca i wzrost gospodarczy), cel zrównoważonego rozwoju 9 (przemysł, innowacje i infrastruktura), cel zrównoważonego rozwoju 10 (zmniejszenie nierówności), cel zrównoważonego rozwoju 11 (Zrównoważone miasta i społeczności) oraz SDG 12 (Odpowiedzialna konsumpcja i produkcja), SDG 17 (Partnerstwo dla osiągnięcia celów). Teoria racjonalnych oczekiwań służy do przewidywania rozwoju przemysłu lekkiego i jego późniejszego wpływu na zrównoważony rozwój w okresie popandemicznym. Udowodniono perspektywy zastosowania teorii w kształceniu specjalistów przemysłu lekkiego. Rozważany jest wpływ skutków pandemii i wojny na Ukrainie na procesy decyzyjne w przemyśle lekkim i ich dostosowanie do celów zrównoważonego rozwoju, z uwzględnieniem wyzwań cywilizacyjnych.

Opracowano model ekonometryczny umożliwiający określenie pożądanej równowagi interesów pomiędzy edukacją a produkcją w oparciu o racjonalne oczekiwania w środowisku zrównoważonego rozwoju. Opowiada się za harmonią między tymi dwoma aspektami, opartą na racjonalnych oczekiwaniach, w celu promowania zrównoważonego rozwoju. Ta równowaga jest kluczowa dla osiągnięcia SDG 4 (Jakość edukacji), SDG 9 (Przemysł, innowacje i infrastruktura) oraz SDG 17 (Partnerstwo dla osiągnięcia celów). Właściwości modelu zapewniają szerokie spektrum zastosowań, pozwalając na ocenę wpływu różnorodnych czynników na zrównoważony rozwój przemysłu lekkiego. Opracowany model można zastosować do szacowania wartości zmiennej zależnej dla poszczególnych krajów lub regionów, a także do analizy wpływu zmiennych niezależnych i kontrolnych na zmiany jej wartości. Jako narzędzie planowania model można dostosować do opracowania kontekstowych strategii zrównoważonego rozwoju w branżach lekkich. W artykule przedstawiono pomysły i praktyczne rozwiązania wykorzystania potencjału przemysłu lekkiego w dążeniu do zrównoważonego rozwoju w warunkach racjonalnych oczekiwań.

**Słowa kluczowe:** zrównoważony rozwój; Cele Zrównoważonego Rozwoju; produkcja; przemysł lekki; edukacja; racjonalne oczekiwania; model ekonometryczny

## 1. Introduction

Achieving the Sustainable Development Goals (SDGs) requires an integrated approach that takes into account the complexities of various sectors, including light industry. Light industry plays an important role in the global economy and at the same time creates unique challenges for sustainable development. In an environmental context, light industry is associated with issues such as climate change, resource depletion and waste generation that pose a direct threat to achieving sustainability, including SDG 13 (Climate action), SDG 12 (Responsible consumption and production) and SDG 6 (Clean water and sanitation). In socio-economic terms, the role of light industry in maintaining inequality, loss of traditional skills and trade imbalance threatens the achievement of SDG 1 (No poverty), SDG 8 (Decent work and economic growth) and SDG 10 (Reduced inequalities).

Building awareness of the importance of adhering to the principles of sustainable development and the sustainable development goals is in the context of preserving the future of the planet. Awareness and acceptance of the economic, social, cultural and environmental consequences of activities not only in the current moment, but also in the global dimension, is a challenge for society, business, representatives of political parties and other actors. Recognition of the need for actions consistent with the SDGs in all spheres of public life is an important stage on the path of sustainable development and an indicator of civilizational choice, and should correspond to the goals and principles of sustainability reflected in (Report of the United Nations Conference ..., 1993; Report of the World Summit..., 2002; Agenda for Sustainable Development, 2015).

The theory of rational expectations (Muth, 1961) is introduced as a key basis for forecasting the development of light industry in the post-pandemic period and its subsequent impact on sustainable development. This theory, which asserts that results partly depend on expectations, serves as an essential tool for strategic decision-making processes in light industry aimed at achieving sustainable development goals.

It is relevant to focus on the greatest shocks, such as the Covid-19 pandemic and the war in Ukraine, which have radically changed the global landscape, creating unprecedented challenges for sustainable development. The pandemic that caused the global health crisis was accompanied by economic and social upheavals, affecting all aspects of human life and impeding progress in achieving the UN Sustainable Development Goals. The consequences of Russia's full-scale invasion of Ukraine affected regional and global stability, economic development and environmental sustainability, which determined the need to consider them in the context of achieving sustainability and industrial development. The war led to large-scale destruction of industrial and civilian infrastructure, including light industry infrastructure.

Understanding the impact of crises on sustainable development makes it possible to identify key problem areas, develop effective mitigation and adaptation strategies, and identify priority actions that will contribute to recovery and increase resilience. Moreover, the study of these consequences can provide valuable knowledge for managing future global crises, whether health-related, conflict-induced or environmental, in a way that guarantees progress towards a sustainable future.

## 2. Methodology

In the course of the work, methods were used, the choice of which was predetermined by the purpose of the research. Analysis and synthesis, induction and deduction have been applied in examining the trends and impact of light industry on sustainable development; in examining the sources of light industry's negative impact on the SDGs and in forming strategies to mitigate this impact; in justifying the application of Rational Expectations Theory to solve the problem of balancing the interests of light industry education and production with the need to comply with sustainable development principles. Modelling was applied in the process of finding a balance between the interests of education and production based on rational expectations in the context of sustainable development in the light industry in the development of an econometric model. A systematic approach was applied in the research process to achieve the objective and justify the results obtained.

The data analysis and evaluation of indicators was based on the following main sources of information and databases:

- Report of the United Nations Conference on Environment and Development, Rio de Janeiro, June 3rd-14th, 1992 (Report of the United Nations Conference ..., 1993);
- Report of the World Summit on Sustainable Development, Johannesburg, South Africa, August 26th - September 4th, 2002 (Report of the World Summit..., 2002);
- Resolution adopted by the General Assembly on September 25th, 2015. Transforming our World: The 2030 Agenda for Sustainable Development (Agenda for Sustainable Development, 2015);
- World Employment and Social Outlook Report: Trends 2023 (World Employment …, 2023);
- International Energy Agency (IEA: Light Industry, 2023).

The study was conducted in three stages. At the first stage, the consequences of the development of light industry were studied, the probability of which should be taken into account due to their negative impact on the SDGs. Sustainability strategies were formulated, the implementation of which makes it possible to neutralize or significantly reduce the expected negative consequences of the economic activities of light industry enterprises. The next stage included a study of the effects of global shocks, such as the pandemic and the Russian war in Ukraine, on sustainable development, including aspects that affect the development of light industry. The application of the theory of rational expectations was justified, the strength and nature of the impact of sustainable development on the results of light industry was assessed, the prospect of taking into account the acquired knowledge in the training of light industry specialists was determined.

At the final stage, an econometric model was developed that has the properties necessary for its adaptation depending on the objectives of the study and the amount of available data, conclusions were formulated and prospects for further research were determined.

## 3. Discussion

In light industry, compliance with the principles of sustainable development is crucial for balancing the interests of education and production. It is also important to preserve the planet's resources and ensure the long-term viability of the industry. Light industry is characterized by complex global supply chains, resource-intensive production processes and significant environmental impacts, including water consumption and pollution, chemical use and waste generation (Patwary et al., 2023; Mesjar et al., 2023). According to the International Energy Agency, light industry accounts for about 17% of industrial emissions (IEA: Light Industry, 2023), while, from a technological point of view, these emissions are easier to reduce than emissions from heavy industry.

Assessing the current situation with the negative impact of light industry on sustainability, we note that the search for ways to increase economic efficiency often contradicts the achievement of sustainable development goals. This is confirmed by the situations when large-scale light industry production is transferred to countries with lower

labour costs and less stringent environmental standards. This trend is observed in Asian countries, including China (Locke, Qin, Brause, 2007; Kraemer, Linden, Dedrick, 2011), Bangladesh (Capitalizing opportunities for 'Seam'-less growth, 2022; Impact Of Global Clothing Retailers' Unfair Practices On Bangladeshi Suppliers During Covid-19, 2023; Akber, 2022), Vietnam (Iram, Malik, 2017 and India (Khurana, 2022; Anthony, Joseph, 2014), as well as in Latin America (World textile and apparel trade and production trends: the USA, Argentina, Brazil, Colombia and Mexico. 2022) and Africa (Morocco resumes production as fashion markets re-open, 2020). Figure 1 shows data on $CO_2$ emissions from light industry by region from 2000 to 2020.

The data presented in Figure 1 indicate that in the early 2000s there was a surge in light industry emissions, primarily due to increased production, especially in China. However, from 2010 to 2020, there was a tendency to reduce emissions (by an average of 2.3% per year) while maintaining growth in total production. Experts associate positive trends with achievements in the field of energy efficiency, in particular the introduction of advanced technologies in China, as well as the transition to electrification of production processes.

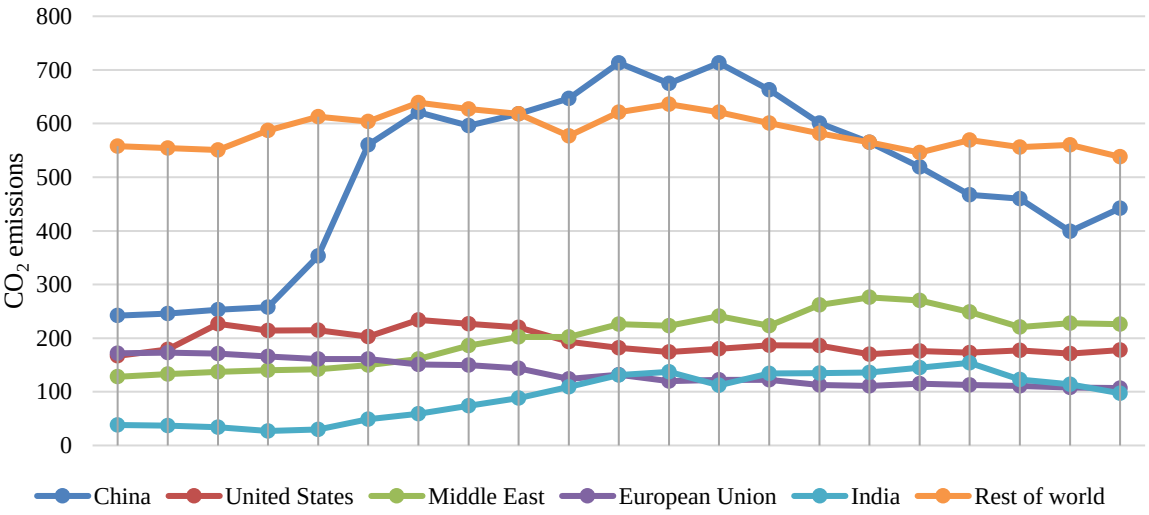


Figure 1. $CO_2$ emissions from light industry by region (IEA, 2023)

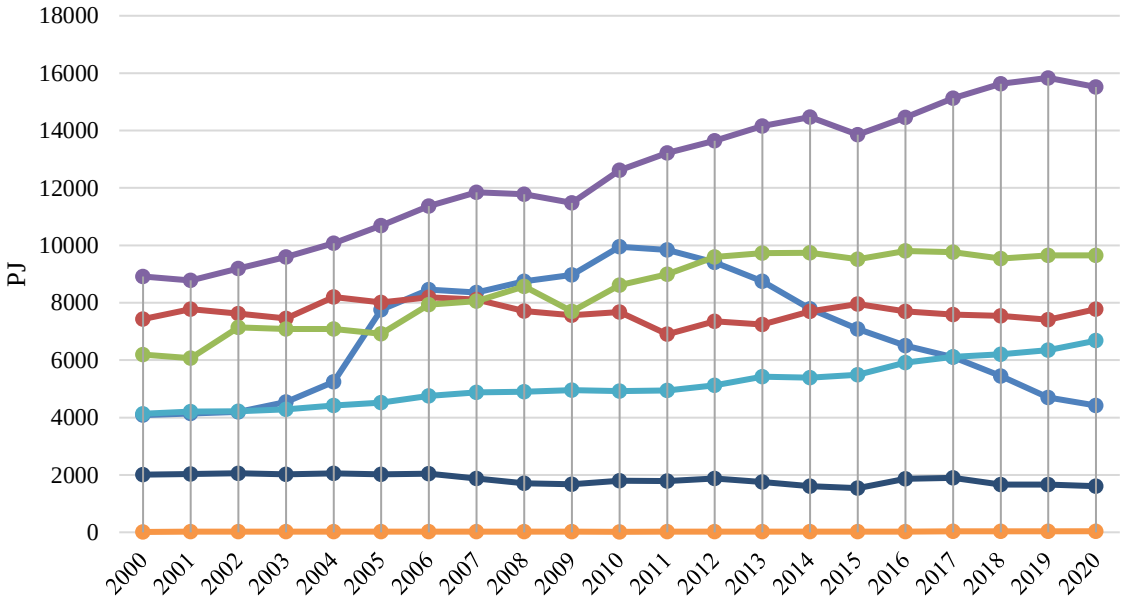


Figure 2. Final energy consumption in light industry by source (IEA, 2022)

According to the IEA, by 2020, less than half of the final energy consumed by light industry was accounted for by fossil fuels, which indicates a decrease of about 10% compared to 2010. It is expected that along with the increase in electricity consumption, the use of bioenergy, including solar, geothermal, wind energy, etc., will increase (IEA: Light Industry, 2022).

The transfer of production to countries with carbon-intensive energy systems leads to an increase in greenhouse gas emissions. For example, China's dependence on coal for electricity production has led to an increase in emissions from production processes, which affects global climate change with serious consequences for both people and ecosystems. The total energy supply (TES) of China from 1990 to 2020 by sources, including coal, is shown in Figure 3.

Assessing the results of 2022, it should be noted that the reduction in $CO_2$ emissions in China by 23 million tons (- 0.2%) and in the EU by 70 million tons (- 2.5%), respectively (IEA: $CO_2$ Emissions in 2022, 2023). Also positive is the reduction in China's industrial $CO_2$ emissions of 161 million tons, which was achieved through slower economic growth and as a result of measures to combat the pandemic (IEA: $CO_2$ Emissions in 2022, 2023). At the same time, US $CO_2$ emissions increased by 36 Mt (+0.8%) in 2022, with the largest increase of 4.2% recorded in emerging Asia and developing countries, excluding China (IEA: $CO_2$ Emissions in 2022, 2023).

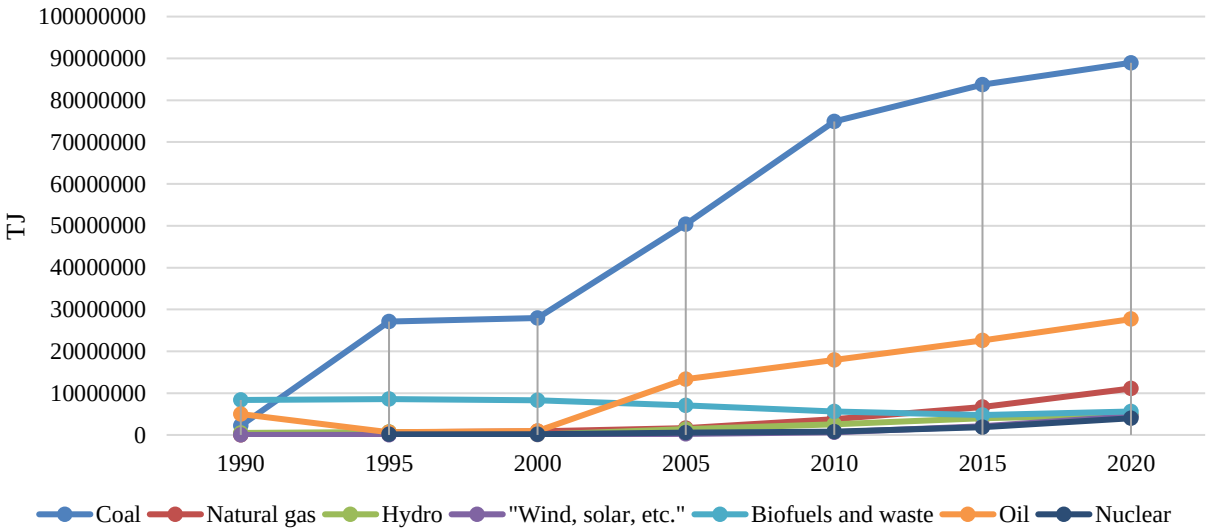


Figure 3. Total energy supply (TES) of China by source (IEA, World Energy Balances 2022, 2023)

Sustainable development and its impact on the performance of companies using data from the manufacturing industry as an example is the subject of a study by L. Chen (Chen, 2015). The relationship between investment and profits of industrial enterprises has been studied by N. Lokhman, V. Serebrenikov, T. Beridze, A. Cherep, I. Dashko (Lokhman et al., 2020). A comparative analysis of models of the procedure for adjusting the independent assessment of the value of assets using green technologies in industry was discussed in the works of Yu. Pozdnyakov, Z. Skybinska, T. Gryniv, I. Britchenko, P. Losonczi, O. Magopets, O. Skybinskyi, N. Hryniv (Pozdnyakov et al., 2021). Sustainable development at the interface with industry and food security is considered by Kushniruk V., Kulinich T., Roik O., Lushchyk M. (Kushniruk, et al., 2021). In the studies of E. Boichenko, I. Bakhov, N. Martynovych, I. Shestopalova, K. Binytska the problems of research work of university students were actualized, where scientists noted the need to study the discipline of sustainable development in the industries (Boichenko et al., 2020). The formation of competences in the field of sustainable development during education, as well as projections regarding future needs for key competences are explored in works of (Cebrián et al., 2020; Cebrián et al., 2021; Matesanz et al., 2023). However, there remain areas that require further study, such as policy and macroeconomic factors, environmental and social impacts. The social consequences of these changes caused by the development of light industry also require further study; in addition, a deeper understanding of changing consumer behaviour and its long-term consequences for the sustainability of light industries is needed. In fact, the light industry is making steps towards sustainable development, but further research is needed to ensure comprehensive and sustainable progress against macroeconomic and political uncertainties.

**Goal.** Considering the above, the purpose of the study is to find a solution to the problem of achieving a balance of interests of production and education in light industry on the basis of rational expectations to achieve sustainable development goals.

## 4. Overview

### *4.1. Global impacts caused by the development of light industry on the achievement of sustainable development goals*

Considering the development of light industry in terms of its impact on sustainable development is a prerequisite for the successful implementation of initiatives aimed at ensuring the achievement of the SDGs. Traditionally, a

much larger number of studies have been devoted to the negative impact on the sustainability of industries related to heavy rather than light industry. However, when solving global sustainability problems, there can be no compromises that shift the emphasis in achieving the sustainable development goals to individual industries, leaving the rest out of focus.

The development of light industry poses threats to sustainable development by depleting resources, polluting the environment, as well as through socio-economic effects, the consequences of which also need to be taken into account. As a result of the research, we have identified global problems that may worsen in the next 10-20 years due to the development of light industry. Despite the task before us of a comprehensive study of the effects of the development of light industry on the achievement of sustainable development goals, at this stage we do not aim to quantify and forecast such an impact; we will present qualitative characteristics linking the development of light industry with specific SDGs.

*4.2. Consequences of the development of light industry on the achievement of the SDGs: environmental context*

The impact of the development of light industry on climate change and greenhouse gas emissions is due to the significant amounts of energy consumed and dependence on fossil fuels. By exacerbating climate change, the increase in greenhouse gas (GHG) emissions has a negative impact on the achievement of SDG 13 (Climate action) (Fig. 4).

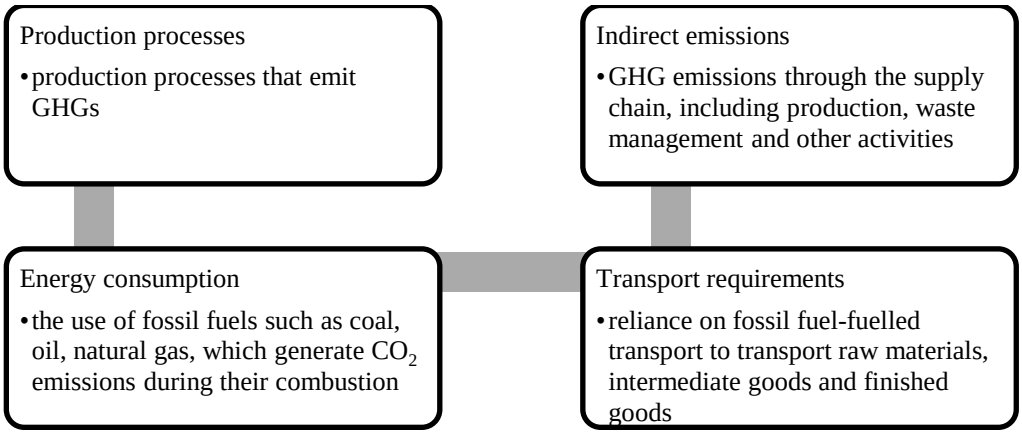


Figure 4. The main sources of the negative impact of light industry on the achievement of SDG 13 (Climate action) (compiled by the authors)

Considering the data in Figure 1, we note that as a result of production processes, GHGs such as carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$) are released, which contributes to global warming and climate change (European Environment Agency, 2023). Light industry enterprises use mainly fossil fuels as energy, the combustion of which generates $CO_2$ emissions, which also affects climate change (Global Energy and Climate Model, 2022). The last of the sources under consideration is indirect emissions, since light industry contributes to greenhouse gas emissions through its supply chains, including energy production, waste management and other activities, prior and subsequent. The identification of the main sources of the negative impact of light industry on the achievement of SDG 13 (Climate action) made it possible to form recommendations on their mitigation or levelling (Table 1).

Table 1. Strategies to mitigate the impact of light industry on climate change (Carbon Disclosure Project, 2023; Gold Standard, 2023; UN Global Compact, 2023)

| Sustainability strategies | Content of the strategy |
|---|---|
| Improving energy efficiency | investments in energy-efficient equipment and technologies aimed at reducing energy consumption and associated GHG emissions |
| Transition to clean and renewable energy | switching to renewable energy sources such as solar, wind and hydropower, which have lower GHG emissions |
| Introduction of Carbon Capture and Storage Technologies (CCS) | Using CCS technology to capture $CO_2$ emissions during production processes and store them underground, preventing emissions into the atmosphere |
| Introduction of sustainable transport options | reducing GHG emissions associated with transportation by choosing more sustainable modes of transport |
| Waste heat recovery | introduction of waste heat recovery systems to capture and reuse heat generated during production processes |
| Life cycle assessment and carbon footprint reduction | product life cycle assessment to determine the possibility of reducing GHG emissions throughout the entire cycle |

The strategies presented in Table 1 do not exhaust the full range of possibilities for reducing the negative impact of light industry on climate change. They can be complemented by supply chain management, carbon offsetting, collaboration and knowledge sharing. The use of strategies will help to reduce the negative impact on the climate and will contribute to the achievement of SDG 13 (Climate action) and other related goals.

The impact of the development of light industry on the depletion of resources and the formation of waste is due to the extensive nature of the growth of the industry, which is manifested in the volumes of extraction, processing and consumption of raw materials, as well as the disposal of products and by-products. These actions have a negative impact on the achievement of SDG 12 (Responsible consumption and production) and SDG 15 (Life on land) (Figure 5).

The exploitation of natural resources often results from the transfer of light industry, which leads not only to excessive extraction of natural resources in host countries and their depletion, but also to habitat destruction and loss of biodiversity (World Resources Institute, 2021).

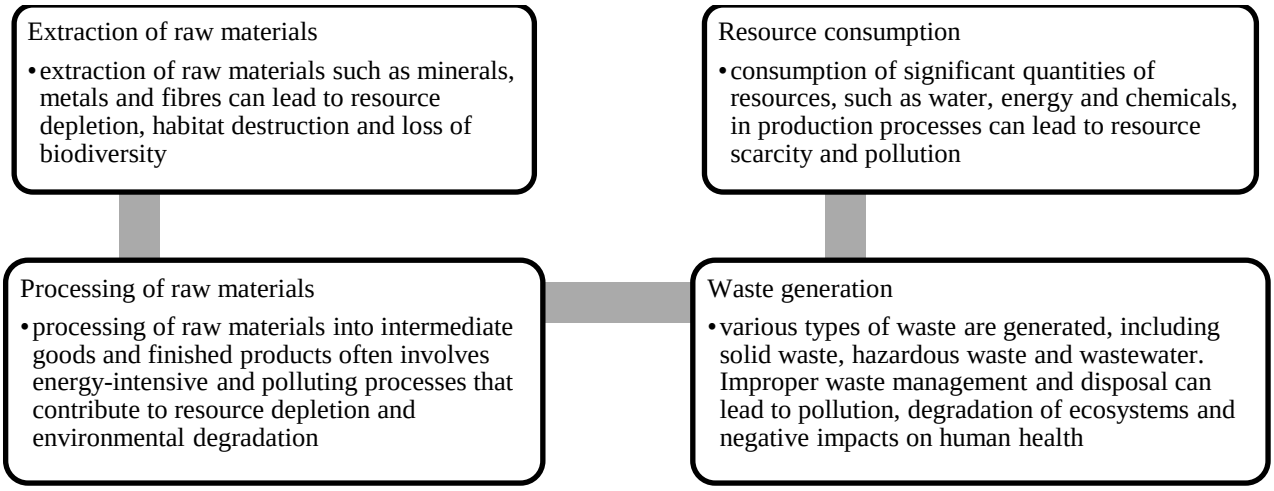


Figure 5. The main sources of the negative impact of light industry on the achievement of SDG 12 (Responsible consumption and production) and SDG 15 (Life on land) (compiled by the authors)

In order to mitigate the consequences of resource depletion and waste generation due to the activities of light industry enterprises, to minimize the negative impact on SDG 12 (Responsible consumption and production) and SDG 15 (Life on land), it is advisable to implement sustainable strategies (Table 2).

Table 2. Strategies to mitigate the impact of light industry on resource depletion and waste generation (European Commission: Environment, 2023; U.S. Environmental Protection Agency, 2023; OECD: Extended Producer Responsibility, 2023; Global Reporting Initiative, 2023)

| Sustainability strategies | Content of the strategy |
|---|---|
| Principles of closed-loop economics | the introduction of the principles of the closed-cycle economy will increase the efficiency of resource use, reduce the amount of waste and their recycling |
| Environmental design and sustainable product development | implementation of processes that stimulate eco-design and sustainable product development as a guarantee of its durability, maintainability and recyclability |
| Sustainable supply and supply chain management | applying responsible sourcing techniques to ensure that suppliers prioritize sustainability |
| Waste minimization and recycling | investments in waste minimization and recycling technologies |

In addition to those presented in the table, it is recommended to use the following strategies: Expanded producer responsibility; resource-efficient production processes; *green* procurement; training and awareness-raising of employees; joint partnership; accountability and transparency. The implementation of strategies to mitigate the impact of light industry on processes related to resource depletion and waste generation will contribute to the achievement of SDG 12 (Responsible consumption and production), SDG 15 (Life on land) and other related goals. The impact of the development of light industry on water scarcity and its pollution is due to the increase in water consumption, the formation of wastewater and the discharge of pollutants into reservoirs, which has negative consequences for SDG 6 (Clean water and sanitation) (Figure 6).

The transfer of light industry to countries with weaker environmental standards leads to an increase in pollution and environmental degradation. It should be noted that the textile industry, as a component of light industry, is responsible for 20% of global industrial water pollution due to the use of chemicals in dyeing and finishing processes (Scott, 2015; Textile-producing nations unite to reduce chemical waste, 2022). For example, the textile

industry in Bangladesh and China is associated with significant water pollution due to the use of hazardous chemicals, which can have detrimental effects on local ecosystems, biodiversity and human health. In order to mitigate the effects of water scarcity and pollution caused by the development of light industry, it is proposed to implement comprehensive strategies and individual sustainable methods (Table 3).

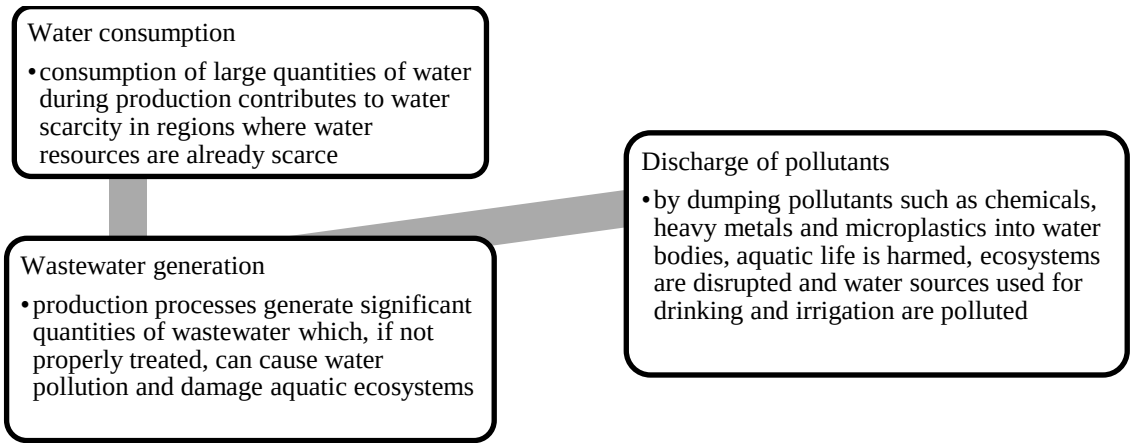


Figure 6. The main sources of the negative impact of light industry on the achievement of SDG 6 (Clean water and sanitation) and SDG 14 (Life under water) (compiled by the authors)

Table 3. Strategies to mitigate the impact of light industry on water scarcity and pollution (Water Footprint Network, 2023; European Commission: Environment, 2023; OECD: Extended Producer Responsibility, 2023; Global Reporting Initiative, 2023)

| Sustainability strategies | Content of the strategy |
|---|---|
| Water-saving technologies | investments in water-saving technologies and processes to reduce water consumption and reduce the burden on water resources |
| Wastewater treatment and reuse | implementation of a wastewater treatment system to remove pollutants before discharge, minimizing their impact on water quality and aquatic ecosystems |
| Sustainable sources of raw materials | purchase of raw materials from suppliers who pay attention to the rational use of water resources to reduce the indirect water footprint |

By implementing sustainable strategies and methods that can be complemented by assessment and monitoring of water-related risks; cooperation and knowledge sharing, light industry enterprises can reduce the problem of water scarcity and the consequences of its pollution, contributing to the achievement of SDG 6 (Clean water and sanitation), SDG 14 (Life under water) and related goals. In addition, these actions can increase the long-term sustainability and competitiveness of light industry in a global market that increasingly values sustainability.

*4.3. Consequences of the development of light industry on the achievement of the SDGs: socio-economic context*

Light industry can create employment opportunities and contribute to the development of host economies, but it can also increase income inequality, exploitation of workers and negative health impacts. Many light industries, such as the garment industry, are characterized by low wages, poor working conditions and lack of social protection (ILO, 2023). In addition, the rapid expansion of these industries can lead to unplanned urbanization and strain on local infrastructure, which entails social and environmental problems. The globalization of light industry can exacerbate these problems, since companies often shift production to countries with lower labour costs, which leads to the exploitation of workers and the effect of a race for sustainable development standards (Bick, Halsey, Ekenga, 2018). The negative impact is manifested as companies seek to minimize costs, and the transfer of light industry production is carried out in countries that compete in lowering environmental and social standards to attract investment. This could undermine global efforts to promote sustainable development and environmental protection (UNCTAD, 2023).

Exploring the impact of light industry on achieving sustainability, we will consider the problem of Persistent inequality in light industry, which manifests itself in various forms, including the wage gap, gender inequality and unequal access to opportunities, which negatively affects the achievement of SDG 5 (Gender equality), SDG 8 (Decent work and economic growth), SDG 10 (Reduced inequalities) (Figure 7).

The loss of traditional skills and cultural heritage also represents the consequences of the development of light industry and the introduction of automated processes. Especially in developing countries, local artisans face increasing competition from mass-produced goods, which is reflected in SDG 8 (Decent work and economic growth), SDG 11 (Sustainable cities and communities) and SDG 12 (Responsible consumption and production) (Figure 8).

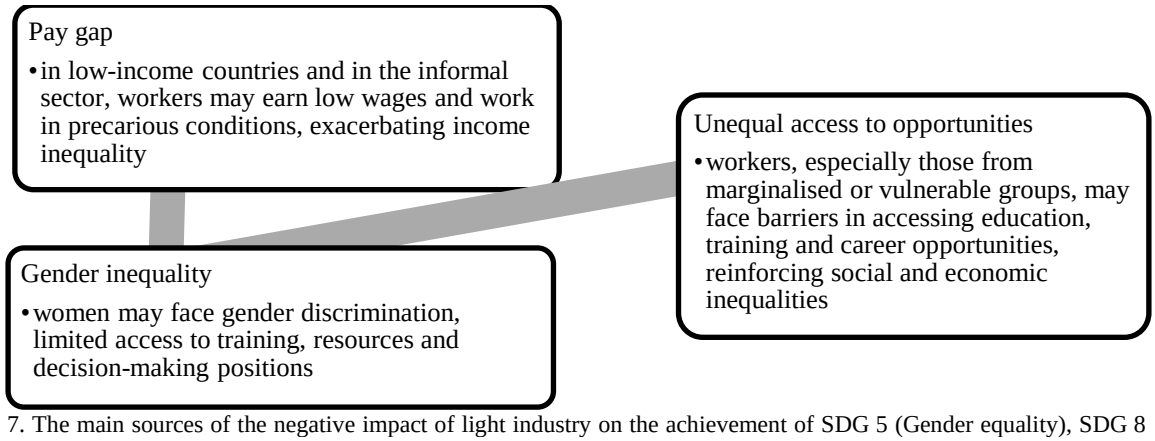


Figure 7. The main sources of the negative impact of light industry on the achievement of SDG 5 (Gender equality), SDG 8 (Decent work and economic growth), SDG 10 (Reduced inequalities) (compiled by the authors)

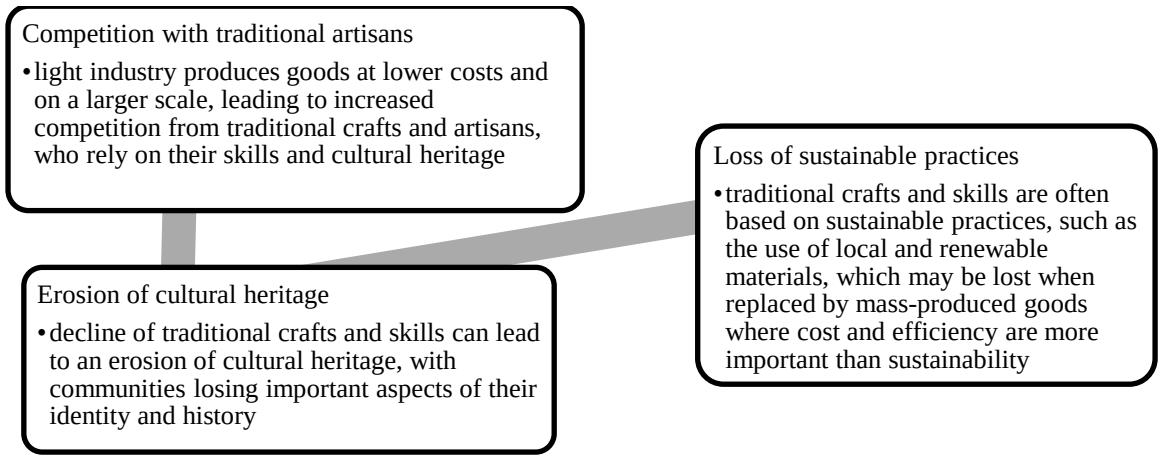


Figure 8. The main sources of the negative impact of light industry on the achievement of SDG 8 (Decent work and economic growth), SDG 11 (Sustainable cities and communities) and SDG 12 (Responsible consumption and production) (compiled by the authors)

The negative impact of light industry on sustainable development is also due to the emergence of trade imbalances and regional imbalances, which is a consequence of the concentration of production in certain countries and regions, affecting SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 10 (Reduced inequalities) and SDG 17 (Partnerships for the goals) (Figure 9).

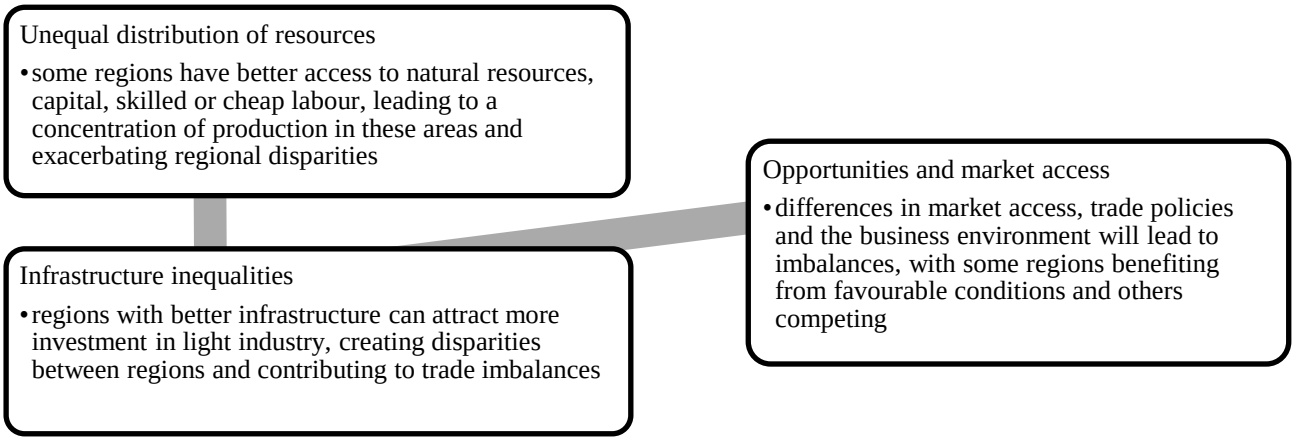


Figure 9. The main sources of the negative impact of light industry on the achievement of SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 10 (Reduced inequalities) and SDG 17 (Partnerships for the goals) (compiled by the authors)

In order to achieve the elimination of persistent inequality; to solve the problems of loss of traditional skills and cultural heritage; to eliminate trade and regional imbalances, it is necessary to implement sustainable strategies aimed at minimizing the negative impact of the problems discussed above (Table 4).

Table 4. Strategies to mitigate the negative socio-economic impact of light industry on sustainable development (UNWTO, 2023; UNESCO, 2023; ILO, 2023; NDP, 2023; World Bank, 2023; WTO, 2023)

| Sustainability strategies | Content of the strategy |
|---|---|
| Fair wages and labour rights | ensuring fair wages and work in safe, decent conditions in accordance with international labour standards |
| Gender equality and women's empowerment | ensuring women have equal access to training, resources and leadership positions; elimination of gender discrimination in the workplace |
| Inclusive education and training | support inclusive education programs that provide workers from marginalized or vulnerable groups with equal opportunities to acquire the skills and knowledge necessary for career growth |
| Support for traditional crafts and artisans | providing financial, technical and marketing support to traditional crafts and artisans, helping them adapt to changing market conditions |
| Promotion of cultural tourism | cooperation for the development of cultural tourism, which can create demand for traditional crafts, contribute to the preservation of cultural heritage |
| Integrating traditional skills and cultural heritage into education | educational institutions can include the study of traditional crafts, skills and cultural heritage in training programs, helping to preserve them for future generations and promoting understanding and recognition of cultures |
| Infrastructure development | investments in improving infrastructure in underdeveloped regions, including transport networks, energy supply and communication systems, to attract investments in light industry and promote the development of the region |
| Fair trade policy and market access | development and implementation of fair trade rules, ensuring equal market access and opportunities for all regions in the light industry sector |
| Encouraging innovation and technology transfer | encouraging innovation and technology transfer in the light industry sector, helping to equalize the rules of the game between regions and reduce disparities |

The implementation of the sustainability strategies discussed in Table 4 will support the achievement of SDG 5 (Gender equality), SDG 8 (Decent work and economic growth), SDG 10 (Reduced Inequalities), SDG 11 (Sustainable cities and communities), and SDG 12 (Responsible consumption and production) and other related SDGs. In addition, these actions will increase the socio-economic and cultural sustainability of communities, promote the integration of cultural heritage into modern practices, and contribute to the creation of more sustainable and inclusive communities.
By adopting and implementing sustainable development strategies, light industry can mitigate its adverse impact and make a positive contribution to achieving the sustainable development goals.

## 5. Application of the Theory of rational expectations in the post-pandemic period to predict the development of light industry and its impact on sustainable development

Rational Expectations Theory (RET) asserts that people make decisions based on the best available information and that their expectations are accurate on average (Main, 2008; Delcey, Sergi, 2019). If in the course of training future specialists have not formed special knowledge and skills, their application in the course of work is not possible. Thus, education plays a crucial role in raising awareness of sustainable development issues and helps to understand the complex interdependencies between the environment, society and the economy. In the process of education, the skills necessary to solve the problems of sustainable development, necessary for innovation, informed decision-making and adaptation to changing circumstances are mastered (European industrial strategy, 2023). The study of issues related to sustainable development fosters a sense of responsibility and freedom of action, which affects civic engagement, contributing to the formation of a more sustainable and inclusive society. Education and vocational training programs, designed with the formation of competencies in the field of sustainable development, ensure the preparation of future specialists for the transition to a *green* economy, including specialized knowledge in areas related to renewable energy sources, energy efficiency and other sectors supporting sustainable development (Azizi et al., 2023). The role of higher education in creating a sustainable future by raising awareness, providing knowledge and promoting the development of values, ethics and skills necessary for sustainable development is discussed (Wieket al., 2011; Silvius, Schipper, 2014). By integrating the principles and methods of sustainable development into higher education, universities and other educational institutions are forming a generation of leaders who will be prepared to solve the problems of sustainable development in various fields of knowledge and fields of activity.
In the context of finding a balance between the interests of education and production in the field of light industry, taking into account sustainable development, the use of an approach based on RET can play a significant role. This is due to the need to take into account not only information that is predictably a priority in the context of the tasks

facing educational organizations, but also a variety of information about the global challenges facing the world community.

Assessing the prospects for the use of RET in the training of specialists for light industry, the inclusion of the consequences of combating the COVID-19 pandemic, Russia's full-scale invasion of Ukraine and deteriorating inflation expectations in the studied topics is updated, which forms a layer of *the best available information* for its further assessment and decision-making in accordance with RET. The pandemic has had an impact on light industry, affecting various aspects of production, demand and employment. One of the consequences for light industry is the disruption of global supply chains, as restrictions and social distancing measures have affected the production and transportation of goods. For example, pandemic-related disruptions in the production of textiles in China, one of the world's largest suppliers, have affected the light industry in many countries, as shown in the data presented in (Figure 10).

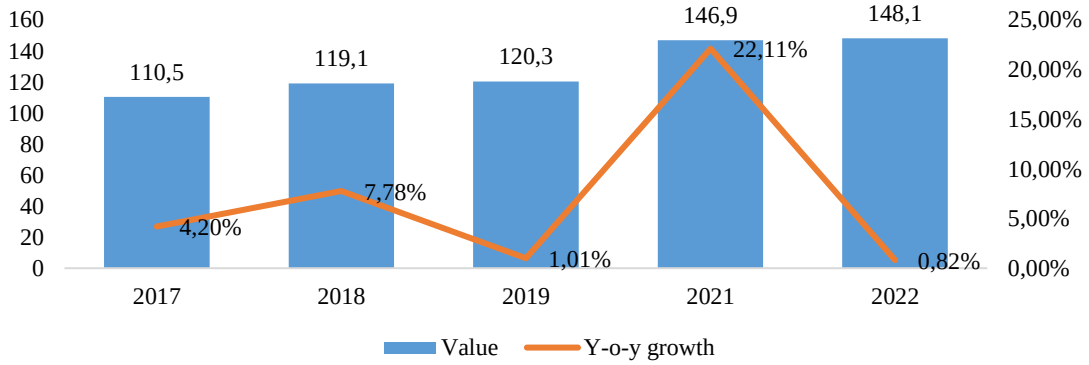


Figure 10. Textile exports of China, billion USD* (CCFGroup: 2022 China's textile and apparel exports review, 2023)
* excluding data for 2020

The scale and complexity of the impact of the pandemic on supply chains is shown in Figure 11.

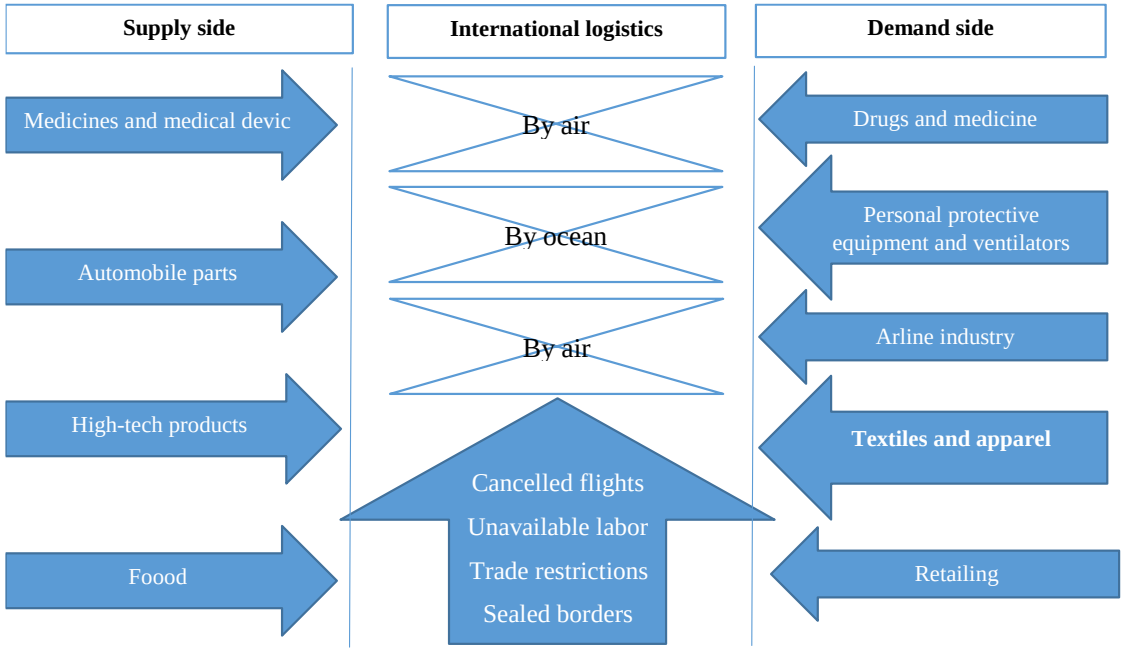


Figure 11. Supply chain disruptions due to the pandemic (Xu Z., Elomri A., Kerbach, L., El O., 2020)

The impact of the pandemic and the ongoing Russian-Ukrainian war on the supply chains of SMEs in Bangladesh is being investigated (Chitra Lekha Karmaker, Ridwan Al Aziz, Tanmoy Palit, A. B. M. Mainul Bari, 2023), confirming the strength and global nature of the shocks associated with Covid-19 and the war in Ukraine (Arriola et al., 2023).Disruption of supply chains, in turn, affects SDG 8 (Decent work and economic growth) and SDG 9 (Industry, innovation and infrastructure), as disruptions in supply chains lead to job losses, slowing economic growth and curbing industrial development.

The pandemic period has changed consumer behaviour, increasing demand for essential goods and services. This has led to a decrease in demand for some light industry goods, such as clothing, while increasing demand for personal protective equipment, medical supplies and household goods. Changing consumer behaviour can have both positive and negative consequences for sustainable development, for example, a positive impact on the achievement of SDG 3 (Good health and well-being) by increasing the demand for medical supplies and personal protective equipment and their availability. However, the decline in demand for some light industry goods has not returned to the pre-pandemic level, which has long-term negative consequences and has an impact on the achievement of SDG 8 (Decent work and economic growth) and SDG 9 (Industry, innovation and infrastructure).
As a result of the constraints associated with the pandemic and the need to adapt to new conditions, the processes of introducing digital technologies in all sectors, including light industry, have accelerated. Digital transformation makes a positive contribution to the achievement of SDG 9 (Industry, Innovation and Infrastructure), promoting innovation and increasing production efficiency. Negative consequences may be associated with increased inequality in access to digital technologies, affecting SDG 10 (Reduced Inequalities).
As a result of the pandemic, there have been massive job cuts, reduced working hours and disruptions in the development of the workforce. Problems with the workforce can negatively affect SDG 8 (Decent work and economic growth) and SDG 4 (Quality education), as they hinder the growth of human capital. During the pandemic, environmental and social problems have worsened, once again focusing on sustainable development and the closed-loop economy. In response to these concerns, some light industry enterprises have begun to prioritize resource efficiency, waste reduction and responsible production methods, which can make a positive contribution to the achievement of several SDGs, including SDG 12 (Responsible consumption and production), SDG 13 (Climate action) and SDG 15 (Life on land), contributing to resource efficiency. Thus, the current IEA data allow us to assess the impact of the pandemic on $CO_2$ emissions by sector (Figure 12, Table 5).

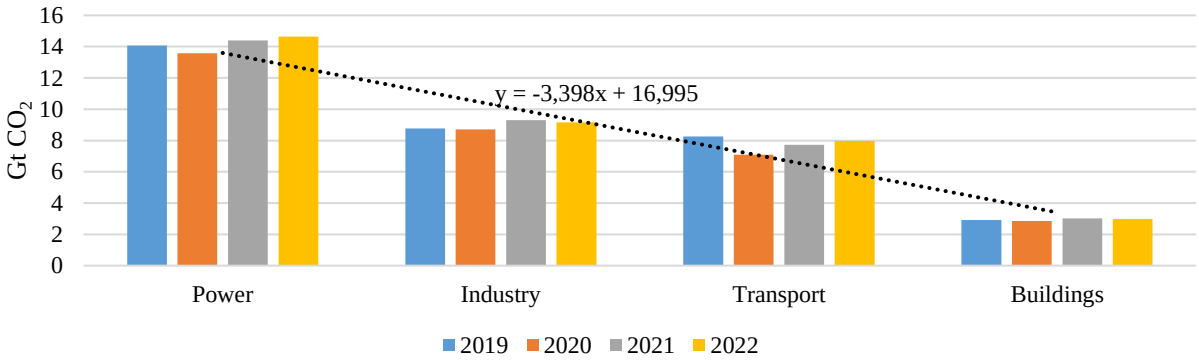


Figure 12. $CO_2$ emissions by industry sector during and after the pandemic (IEA: Global $CO_2$ emissions by sector, 2023)

The presented data show that in all sectors of the industry during the pandemic, there was a steady downward trend in global $CO_2$ emissions. So, for example, for the period 2019-2020, a reduction in Power is set - 0.5; Industry - 0.05; Transport - 1.17; Buildings -0.06. However, in 2021, according to the International Energy Agency, an increase in emissions followed, which in a year exceeded the figures for 2019 in all sectors except transport. (IEA: Global $CO_2$ emissions by sector, 2023).
Information characterizing the state of light industry in Ukraine during the recovery period after the pandemic is presented in Figure 13. Despite the fact that the number of light industry enterprises decreased by 2241 units from 2019 to 2021 (including 2349 units - FLP), the volume of sales for the same period increased by UAH 11,205.1 million, which indicates adaptation and gradual recovery after the coronavirus. However, the active hostilities that followed in 2022, according to Forbes, forced about 60% of clothing enterprises to reformat, suspend or cease operations (Ministry of Economy of Ukraine, 2022).
The damage to energy, industrial and civil infrastructure is so significant that entire industries are in danger of disappearing. The impact of war on the environment is explored in A. Saxena (Saxena, 2023). Figure 14 shows the scale of destruction of individual sectors of the Ukrainian economy.
Destroyed cities and villages are not all subject to restoration, and mined areas reach 30% of the territory of Ukraine (Uryadovy kur'er, 2023).
According to the report of the Government of Ukraine, the World Bank Group, the European Commission and the United Nations *Second Ukraine Rapid Damage and Needs Assessment – RDNA2* for a year only (from February 24, 2022 to February 24 2023) direct damage to Ukraine's infrastructure is estimated at more than $135 billion, economic damage reaches $290 billion (Uriadovy portal, 2023), and the cost of reconstruction has increased to $411 billion as of April 2023.(World Bank: Updated Ukraine Recovery and Reconstruction Needs Assessment, 2023).

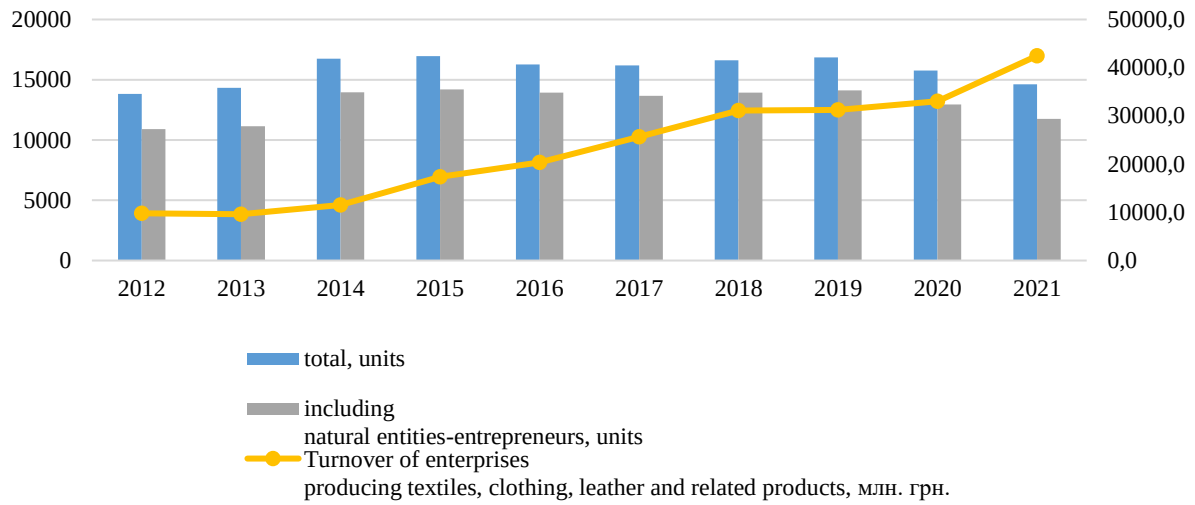


Figure 13. Dynamics of product sales and the number of light industry enterprises in Ukraine, UAH mln (State Statistics Service of Ukraine, 2023)

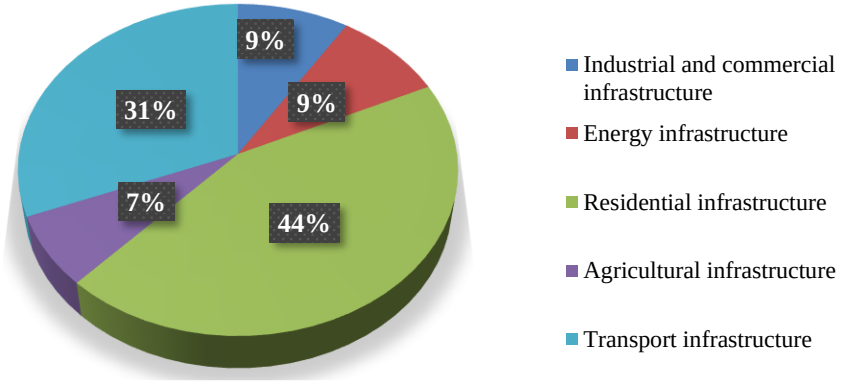


Figure 14. War damage to infrastructure by most affected sectors (World Bank: Updated Ukraine Recovery and Reconstruction Needs Assessment, 2023)

It is important to take into account that in addition to the energy crisis, which primarily affected European countries, food security is a significant problem, since both Ukraine and Russia are among the world's largest producers and exporters of grains and oilseeds (Faqin Lin, Xuecao Li, Ningyuan Jia, Fan Feng, Hai Huang, Jianxi Huang, Shenggen Fan, Philippe Ciais, Xiao-Peng Song, 2023; Mohammad Al-Saidi, 2023). Africa and the Middle East have proven to be the most sensitive to the effects of grain supply disruptions (Nobuhiro Hosoe, 2023; Malick Kebe & Saralees Nadarajah, 2023; Mohammad Al-Saidi, 2023).

Today it is impossible to accurately assess the damage that has already been done by this war and assess the consequences. So, on 06/06/2023, the Kakhovskaya hydroelectric power station was blown up, which is the largest man-made and environmental disaster after the accident at the Chernobyl nuclear power plant. According to forecast data, 80 settlements turned out to be in the flood zone, there are casualties among the civilian population (Skilki people perished due to the flooding of the Kherson region, 2023). Farmers will not be able to use 1-1.5 million hectares of land. The water supply to irrigation systems in Dnepropetrovsk, Kherson and Zaporozhye regions was stopped, which provided irrigation for 584 thousand hectares. (collected about 4 million tons of grains and oilseeds worth about $1.5 billion). As of June 9, more than 1,100 km of reclamation canals in Ukraine were left without water. A large-scale catastrophe led to the death of wild and domestic animals, the death of freshwater fish and other biological resources was recorded (Pidriv Kakhovskaya GES, 2023).

Considering the impact on the achievement of individual sustainable development goals, it can be noted that war leads to a deterioration in air quality due to constant hostilities and bombing; the quality of the soil is deteriorating, as a result of shelling and explosions, the physical, chemical and biological properties of the soil are violated; water bodies are polluted; the possibility of leakage of radiation from nuclear facilities raises concerns. War directly interferes with efforts to address climate change; ecosystems are being destroyed, there is a long-term risk of loss of biodiversity and potential extinction of species. In response to the energy crisis, spending increased to

provide government support for investment in clean energy, to support consumers from energy price spikes (Figure 15).
While positively assessing the support provided, it is necessary to note the unevenness of spending falling on advanced economies (93% of total government support for investments in clean energy and 85% of support for consumer affordability).

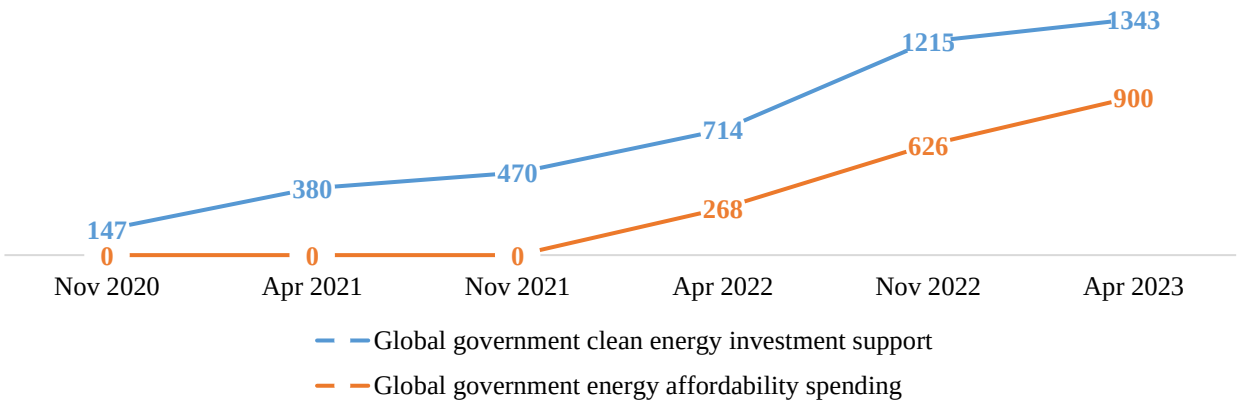


Figure 15. Government Spending to Support Investment in Clean Energy and Crisis-Related Short-Term Measures to Make Energy Affordable to Consumers during the Pandemic and Post-Pandemic Period, $ billion (IEA: Government spending for clean energy investment support and crisis-related short-term consumer energy affordability measures, 2023)

A number of countries, such as China, India, some African and Asian countries, Pakistan, Armenia, Kazakhstan, Kyrgyzstan, Tajikistan and Uzbekistan, demonstrate neutrality, while North Korea, Syria, Nicaragua, Belarus - non-recognition of Russia's military aggression, including when voting in UN. Neutrality is also adhered to by the countries of the Middle East, focusing on their own national interests (Liu, Shu, 2023). Research confirms that this position is held by countries that are connected with Russia by agreements on cooperation in the field of defense; countries with a long tradition of left-wing government; countries that receive significant aid from Russia, share political characteristics and have never been at war with it (Mohammad Reza Farzanegan and Hassan F. Gholipour, 2023). In our opinion, the position of governments demonstrates not only a commitment to democratic values, but also a civilizational choice, since even a neutral position leads to increased geopolitical instability and difficult to predict consequences in the field of food, energy, and environmental security.
Thus, given the scale of the impact on the environment, we can state a negative impact on SDG 2 (Zero hunger), SDG 3 (Good health and well-being), SDG 6 (Clean water and sanitation), SDG 7 (Affordable and clean energy), SDG 11 (Sustainable cities and communities), SDG 12 (Responsible consumption and production), SDG 13 (Climate action), SDG 14 (Life under water), SDG 15 (Life on land).
In addition, the impact of the war on health, education, social welfare, directly affects the achievement of SDG 3 (Good health and well-being), SDG 4 (Quality education) and SDG 1 (No poverty), and will be long-term, and the destruction of productive capacity - on SDG 8 (Decent work and economic growth) and SDG 9 (Industry, innovation and infrastructure).
To prevent the possibility of such damage in the future and to bring those responsible to justice, the mandate of the International Criminal Court must be reformed to include environmental crimes in the long term. New global standards need to be set for protecting the environment in times of conflict by supporting SDG 16 (Peace, justice and strong institutions). This problem is considered by D. Palarczyk (Palarczyk, 2023). The environment should not be seen as an inevitable casualty of war. The relationship between environmental and human security is obvious. Addressing this issue should be a priority in the international community's response to the crisis, highlighting the importance of SDG 17 (Partnership to Achieve the Goals).
Assessing the benefits of applying the theory of rational expectations in the training of specialists, we note that it allows you to get more accurate forecasts, provides a more efficient allocation of resources and, in general, forms an up-to-date agenda aimed at promoting sustainable development in the light industry.

## 6. Modelling the process of finding a balance between the interests of education and production based on rational expectations in the context of sustainable development in the field of light industry

Taking into account the interdisciplinary nature of the problems that need to be solved in the process of finding a balance of interests of education and production for the light industry from the point of view of sustainable development and substantiating the feasibility of applying the rational expectations theory, we formalize the approach

to solving the tasks set in the study by developing an econometric model (Heckman, Pinto, 2022; Bailey et al., 2021)

The development of an econometric model to find a balance of interests between education and production in light industry based on the rational expectations theory from the point of view of sustainable development requires the selection of appropriate variables that reflect the dynamics of both the educational and manufacturing sectors in the context of achieving the SDGs. It is also advisable to include variables in the model that reflect existing approaches to assessing the efficiency and cost-effectiveness of production in the TCLF industry from the standpoint of commitment to the values of sustainable development. The sequence of model formation is shown in Figure 16.

The dependent variable is the desired value of the balance of interests between education and production, which will reflect the level of sustainable development in the field of light industry. In this model, it is an index combining various indicators related to environmental, social and economic aspects of sustainability. The logic of using the index to measure the effectiveness of sustainable development is supported by the UN Sustainable Development Goals (Agenda for Sustainable Development, 2015), which provide a framework for tracking progress in economic, social and environmental sustainability.

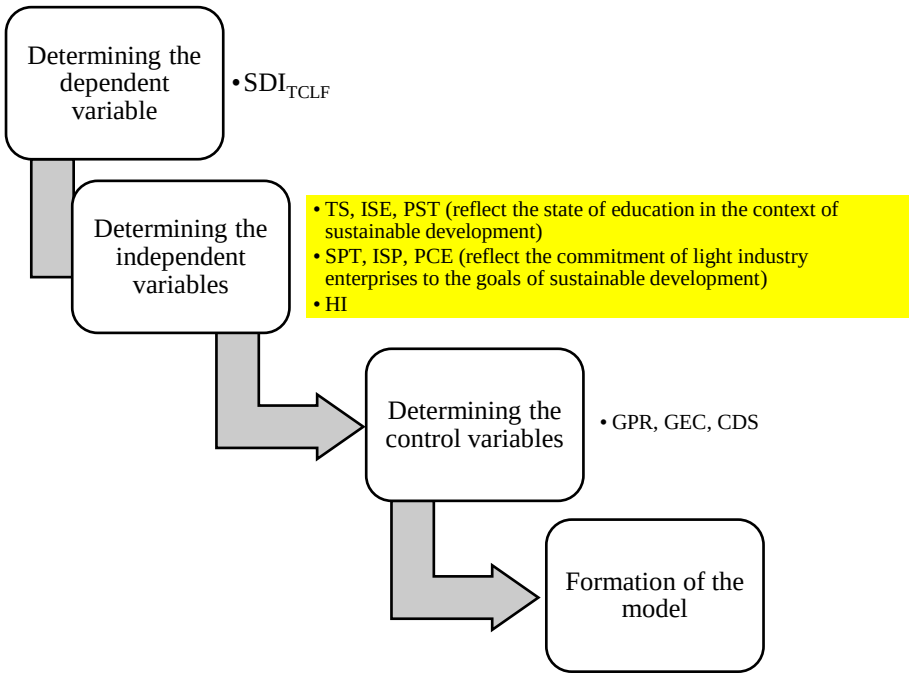


Figure 16. Modelling stages in the process of finding a balance of interests between education and production in the field of light industry (compiled by the authors)

Independent variables are variables related to education; variables related to production; the Higg index. Variables related to education include variables reflecting the impact of education on sustainable development, such as the number of trained specialists in the field of sustainable development (TS), investments in sustainable development education (ISE) and the percentage of light industry enterprises that support sustainable development training (PST).

The variables related to production include those that reflect the impact of production on sustainable development, such as the level of implementation of sustainable production technologies (SPT), investments in sustainable production methods (ISP) and the percentage of enterprises implementing the principles of closed-loop economics (PCE).

As an independent variable, we also suggest using the Higg index (HI) (Sustainable Apparel Coalition: The Higg Index, 2023). Although the Higg index is a valuable tool for assessing the social and environmental performance of the value chain and products, it cannot replace the econometric model. These two tools serve different purposes and should be used together to achieve a comprehensive understanding of the needs and progress of the TCLF industry in the field of sustainable development. The econometric model can help to find a balance between education and production interests, and the Higg index helps to a greater extent in assessing the sustainability of the value chain and products of the industry.

When determining control variables, we take into account those that may affect the indicators of sustainable development of the industry, but are not directly related to education or production. The control variables are government policy and regulations (GPR), global economic conditions (GEC) and consumer demand for sustainable products (CDS). Based on the rational expectations theory, we assume that stakeholders in the light industry have

rational expectations about the future state of the industry and make decisions based on available information. Based on this, the econometric model will have the form (1):

$$SDI_{TCLF} = \beta0 + \beta1(TS) + \beta2(ISE) + \beta3(PST) + \beta4(SPT) + \beta5(ISP) + \\ + \beta6(PCE) + \beta7(GPR) + \beta8(GEC) + \beta9(CDS) + \beta10\ (HI) + \varepsilon \quad (1)$$

Where:
$SDI_{TCLF}$ – Sustainable Development Performance Index;
TS – number of trained specialists in the field of sustainable development;
ISE – investments in sustainable development education;
PST – percentage of light industry enterprises that support sustainable development training;
SPT – the level of implementation of sustainable production technologies by TCLF enterprises;
ISP – investment in sustainable production practices by TCLF enterprises;
PCE – percentage of TCLF businesses implementing circular economy principles;
GPR – government policy and regulations;
GEC – global economic conditions;
CDS – consumer demand for sustainable products.
HI – the Higg index, reflecting the environmental and social indicators of companies in the light industry (the original methodology makes it possible to standardize the sustainability of the value chain in the TCLF industry);
$\beta0$ – a fixed term; represents the value of the dependent variable ($SDI_{TCLF}$) when all independent variables are zero. It serves as a base value that the model uses to account for other factors not included in the equation. The fixed term may also reflect the average level of sustainability in the TCLF industry, which is not explained by independent variables;
$\beta1$ – $\beta10$ are coefficients measuring the impact of each variable on the SDI TCLF Sustainable Development Performance $_{Index}$.
$\varepsilon$ – a random error.
The advantages of the model are its adaptability, flexibility, interpretability, the possibility of quantitative analysis and the possibility of comparison in different contexts. The adaptability of the model is realized due to the possibility of its adaptation without loss of content and semantic components, depending on the goals of the study or the availability of data. If new variables or factors become important determinants of sustainable development in the field of light industry, they can be included in the model. If relevance is lost, variables can be removed from the model, which will not change its structure.
The flexibility of the model allows including a different number of independent variables, depending on the objectives of the study or the industry context. This flexibility allows adapting the model depending on the objectives of the study and ensure that the most important factors are taken into account in the analysis.
Interpretability is realized in the fact that the structure of the model makes it easy to interpret the estimated coefficients, which makes it possible to assess the relative importance of various factors affecting sustainable development in the field of light industry. Interpretability helps to ensure that decisions made by stakeholders are reasonable and predictably more accurate.
The model facilitates quantitative analysis, allowing to assess the impact of various factors on sustainable development in the field of light industry. This, in turn, makes it possible to identify key factors affecting sustainable development, as well as to form targeted measures or strategies based on the information received. The solutions obtained will contribute to the achievement of SDG 4 (Quality Education), SDG 9 (Industry, innovation and infrastructure) and SDG 17 (Partnerships for the goals). The developed model can be applied to estimate the discrete values of the dependent variable ($SDI_{TCLF}$) for individual countries or regions, as well as to analyse the influence of independent and control variables on changes in its value. This can provide information for the development of context-sensitive strategies to increase sustainability in the industry.
Thus, adaptability, flexibility, interpretability, quantitative analysis capabilities and the ability to compare in different contexts make this econometric model a valuable tool for researchers, policy makers and industry stakeholders seeking to better understand and promote sustainable development in the light industry. Verification and analysis of the model can be carried out using statistical tests, such as the criterion of agreement (R-squared), t-tests for individual coefficients and F-tests for general significance, which will make it possible to assess the balance of interests between education and production from the point of view of sustainable development of the light industry.
Based on the results of the model, there is access to information about factors that contribute to the balance of interests between education and production in the context of sustainable development.

## 7. Conclusions

The study proves that the development of light industry has a significant impact on the achievement of sustainable development goals. Global problems related to light industry will intensify in the next decade, taking into account trends such as population growth, consumer demand growth and climate change.

Globalization is further exacerbating existing problems, as the relocation of large light industry enterprises to countries with lower labour costs and less stringent environmental standards, such as China, Bangladesh, Vietnam, India and the regions of Latin America and Africa, has significant consequences for the environment and sustainable development. This shift contributes to an increase in greenhouse gas emissions, especially when production moves to countries with carbon-intensive energy systems. The implications for global climate change are severe, affecting both people and ecosystems, and negatively impacting progress towards SDG 13 (Climate action). The development of light industry also affects the depletion of resources and the formation of waste, often in the form of non-degradable materials such as plastics, which has a negative impact on the achievement of SDG 12 (Responsible consumption and production) and SDG 15 (Life on land). Another side effect of the activities of light industry enterprises is its impact on environmental pollution due to increased water consumption, the formation of wastewater and the discharge of pollutants into reservoirs, which hinders the achievement of SDG 6 (Clean water and sanitation) and SDG 14 (Life under water). For each block of the considered problems, a set of sustainable strategies is proposed in the work: to mitigate the impact of light industry on climate change; on resource depletion and waste generation; on the consequences of water scarcity and pollution.

The development and globalization of light industry, providing employment and stimulating economic growth in the home countries and regions, also contributes to the emergence and growth of such problems as income inequality, exploitation of workers, gender inequality and negative impact on health. The introduction of process automation can contribute to the loss of traditional skills and cultural heritage, which is especially important for developing countries.

Persistent inequality in light industry hinders the achievement of SDG 5 (Gender equality), SDG 8 (Decent work and economic growth) and SDG 10 (Reduced inequalities), SDG 11 (Sustainable cities and communities), since cultural heritage is an integral part of the identity and sustainability of the community, and its loss can damage the social structure of communities. In addition, it affects SDG 12 (Responsible consumption and production), since traditional practices often embody sustainable consumption and production values that are lost during the transition to mass production. It is also proved that the rapid development of light industry sectors can lead to unregulated urbanization and strain on local infrastructure, trade and regional imbalances, which leads to potential imbalances and inequality, causing additional social and environmental problems, affecting SDG 8 (Decent work and economic growth), SDG 9 (Industry, innovation and infrastructure), SDG 10 (Reduced inequalities) and SDG 17 (Partnerships for the goals).

In order to minimize the negative consequences of the development of light industry, it is proposed to implement comprehensive strategies that will ensure compliance with the principles of sustainability and social justice, which will be crucial to overcome these problems and make a positive contribution to global efforts to achieve the SDGs. Global events, such as the pandemic and geopolitical conflicts, have a significant impact on the achievement of sustainable development goals. They not only directly disrupt the work of light industry, but also indirectly affect the balance between the interests of education and production. The approach proposed in this paper, based on the predictive power of rational expectations, allows us to more systematically consider the information necessary to predict the development of light industry in the post-pandemic period. The theory of rational expectations also emphasizes the importance of recognizing and taking into account the potential impact of various socio-economic factors on sustainable development, thus being a tool in balancing the interests of education and production in light industry. It is determined that the inclusion of the rational expectations theory in the analysis of the sustainable development of light industry makes it possible to obtain more accurate forecasts, ensures efficient allocation of resources and forms an agenda aimed at promoting sustainable development in the field of light industry.

In order to find a balance between the interests of education and production based on rational expectations in the context of sustainable development in the field of light industry, an econometric model has been developed that includes variables that reflect the dynamics of both the educational and manufacturing sectors in the context of achieving sustainable development goals. The advantages of the model are its adaptability, flexibility, interpretability, the ability to conduct quantitative analysis and the ability to compare in different contexts, which makes it a valuable tool for researchers, policy makers and other stakeholders who are ready to implement the principles of sustainable development. The direction of further research is related to the approbation of the econometric model and its adaptation in order to obtain an effective tool for measuring the balance between education and production, as well as additional variables included in the model; the development of practical strategies for implementing this balance and further improving the model to take into account new global challenges and opportunities.

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