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<https://doi.org/10.26661/2414-0287-2020-3-47-15>**IMPLEMENTATION OF THE “EUROPE 2020: A STRATEGY FOR SMART, SUSTAINABLE AND INCLUSIVE GROWTH” BY THE EU COUNTRIES - KEY MESSAGES FOR UKRAINE****Korinnyi S.O., Kondratenko A.***Zaporizhzhia National University*  
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**Key words:**

circular economy model, economic development strategy, R&amp;D intensity, resource efficiency, tax system.

The article reviews the implementation of the goals set in the Strategy “Europe 2020: A strategy for smart, sustainable and inclusive growth” for the EU. The implementation of the strategy’s goals in the context of individual countries is analyzed. The necessity of improving the same spheres in Ukraine as in the EU was justified. It was found out which goals have already been achieved and which goals will be difficult to meet on time by the EU. The situation in the same spheres in Ukraine was considered and compared with European. The dynamics of changes in the cumulative difference in the number of people living in the risk of poverty or social exclusion compared to 2008 in the EU is studied. The shares of different sectors among sources of investment in Research & Development (R&D) in the EU and Ukraine have been determined and compared. It is established that by implementing the Europe 2020 Strategy, the EU plans to gradually transform its economy from a linear to a circular model. The main factors of strengthening the EU economy according to the Europe 2020 Strategy have been identified. The main reasons forcing the EU countries to switch to a circular economy model have been investigated. The characteristics of the circular economy model are defined. Positive and negative consequences of the transformation of the EU countries’ economies to circular model have been determined. The main problems that the EU countries may face during the transition to a circular economy model have been identified. The necessity of revising the taxation system in the EU and Ukraine in order to stimulate economic entities to implement promptly the principles of a circular economy has been proved. The main reasons for Ukraine to implement similar reforms are justified. The priority spheres for reformation in Ukraine have been determined.

**РЕАЛІЗАЦІЯ СТРАТЕГІЇ «ЄВРОПА 2020: СТРАТЕГІЯ РОЗУМНОГО, СТАЛОГО ТА ІНКЛЮЗИВНОГО ЗРОСТАННЯ» КРАЇНАМИ ЄС – КЛЮЧОВІ АСПЕКТИ ДЛЯ УКРАЇНИ****Корінний С.О., Кондратенко А.***Запорізький національний університет*  
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модель кругової економіки, стратегія економічного розвитку, інтенсивність НДДКР, ефективність використання ресурсів, податкова система.

В статті розглядається реалізація ЄС цілей, визначених у Стратегії «Європа 2020: Стратегія розумного, стійкого та всеосяжного зростання». Проаналізовано реалізацію цілей стратегії в контексті окремих країн. Визначено необхідність вдосконалення тих самих сфер в Україні, що і в ЄС. Було з’ясовано, які цілі вже досягнуті та які цілі буде важко досягти вчасно ЄС. Ситуацію в тих самих сферах в Україні розглянуто та порівняно з європейською. Досліджено динаміку змін сукупної різниці у кількості людей, які живуть на межі бідності чи соціального відчуження порівняно з 2008 роком у ЄС. Визначено та порівняно частки різних секторів серед джерел інвестицій у дослідження та розробки (НДДКР) в ЄС та Україні. Встановлено, що реалізуючи стратегію «Європа-2020» ЄС планує поступово трансформувати свою економіку з лінійної в циркулярну модель. Визначено основні фактори зміцнення економіки ЄС відповідно до стратегії «Європа 2020». Досліджено основні причини, що змушують країни ЄС перейти до економіки замкнутого циклу. Визначено характеристики моделі циркулярної економіки, а також позитивні та негативні наслідки перетворення економіки країн ЄС на циркулярну. Встановлено основні проблеми, з якими можуть зіткнутися країни ЄС під час переходу до моделі економіки замкнутого циклу. Доведено необхідність перегляду системи оподаткування в ЄС та Україні з метою стимулювання суб’єктів господарювання до швидкого впровадження принципів циркулярної економіки. Обґрунтовано основні причини для проведення подібних реформ в Україні. Визначено пріоритетні сфери реформування в Україні.

### Statement of the problem

At the present stage of mankind development, a single and closely connected socio-ecological system of a planetary scale is being formed. Europe and the whole world are confronted with numerous interconnected problems, the scale of which grows over the years. These include an increase in food, water, natural resources, energy demand in the context of climate change and environmental degradation. The solution of these problems, along with the need to support socio-economic prosperity within permanent population growth, which occurs in the EU countries mainly due to immigration, requires changes in the existing economic model. One of the biggest problems of the EU is its dependence on imports of energy resources. This problem is especially actual in the context of political instability nowadays, primarily in relations with Russia, which provides about a half of the EU's natural gas needs. That is why the diversification of energy supply routes, as well as the research and development of alternative energy sources to ensure a high level of energy security of community member countries, is of the highest importance [2].

Among the positive prerequisites for the shift to the circular economy, the main thing is the development of scientific sphere. The shift is facilitated, first of all, by the emergence of new technologies related to renewable energy sources, the reuse of resources and waste management, as well as the development of digital technologies. Moreover, business is interested in reducing cost of materials due to their reuse, which encourages it to increase investment in research and development related to this area. The awareness of the population and business about the negative impact on the environment has also increased, which contributes to the transformation of the economy and society as a whole according to the concept of the circular economy.

### Analysis of recent studies and publications

In the economic literature, the problems of the shift from a linear economy to a circular one are considered in the works of Andrey Avramenko, Mikhail Gorbachev-Fadeev, Kenneth Boulding, Rachel Carson, Richard Dobbs, Jeremy Oppenheim, Fraser Thompson, Marcel Brinkman, Marc Zornes, Martin Lehmann, Bas de Leeuw, Eric Fehr, Donella Meadows, Dennis Meadows, Jorgen Randers, William Behrens III, Zengwei Yuan, Jun Bi, Yuichi Moriguchi, Di Wu [1], Ellen MacArthur [2] and other. The EU's shift to the circular economy is considered in the works of Anet Grigoryan, Natalya Borodavkina, Lauri Hetemäki, Marc Hanewinkel, Bart Muys, Markku Ollikainen, Antoni Trasobares, Marc Palahi, Yelena Sidorova, Christian Skonberg, Anders Wijkman [8], Vladimir Gonda [9] and other.

The shift from the linear to the circular economy is especially actual today, in conditions of low-efficient use of resources, the exhaustibility of natural resources and environmental pollution. Modern globalization processes increase the pressure on the environment, but they also increase the opportunity to realize the concept of circular economy. Therefore, it is rational to study the experience of the EU countries as advanced in this field.

### Objectives of the article

The objective of the article is to study and analyze the main trends associated with the EU-countries' shift to the model of the circular economy by implementing the strategy "Europe 2020: A strategy for smart, sustainable and inclusive growth".

### The main material of the research

Today, there is no unified interpretation of the concept of circular economy.

According to Di Wu, the circular economy is an economy that develops via recycling and reusing the waste. Its target is minimization of the amount of natural resource consumed by economic production, pollution discharged into the environment, and the overall ecological damage caused to the environment by the economy [1].

Ellen MacArthur considers circular economy as an economy based on the principles of waste and pollution management, the conservation of products and materials in use, and regenerating natural systems [2].

According to the Global Forum on Environment, the circular economy is a concept that aims at closing materials loops and extending the lifespan of materials through longer use, and the increased use of secondary raw materials [3].

In March 2010, the EU adopted a new strategy for economic development – "Europe 2020: A strategy for smart, sustainable and inclusive growth". To some extent, it is continuing of the Lisbon Strategy for 2000-2010, which turned out to be ineffective due to the lack of coordination between the EU countries and the Great Recession since 2008.

Concerning Ukraine, we can adapt the following elements of the Europe 2020 strategy: decreasing the level of unemployment, increasing the R&D expenditures, the degree of competitiveness, resource efficiency and environmental friendliness of the economy.

One of the Strategy's targets is to increase the R&D intensity to 3% of GDP by 2020 [4]. As of 2010, EU's R&D expenditures were about 2% of GDP. According to provisional data, in 2018 EU countries on average spent on R&D 2.12% of GDP, which leads to disappointing forecasts of experts and analysts on goal achievement. Simultaneously, there is a fairly significant difference between the indicators of individual EU countries. As of 2018, only Austria, Denmark, Germany and Sweden exceeded the R&D intensity rate of 3% of GDP. Regarding indicators for individual countries, their targets as of 2018 exceeded Germany (3.13%), Denmark (3.03%), the Czech Republic (1.93%) and Cyprus (0.55%) [5].

As of 2017, the business enterprise sector (66%) provided the largest share of investments in R&D among all the sources. It was followed by the higher education sector (22.1%), the government sector (11.2%) and the private non-profit sector (0.7%) (Figure 1). Compared to 2008, there was an increase in the share of the business enterprise sector by 2.8% and a decrease in the shares of other sectors (government sector by 1.7%, higher education sector by 0.8% and private non-profit sector by 0.3%) [6].

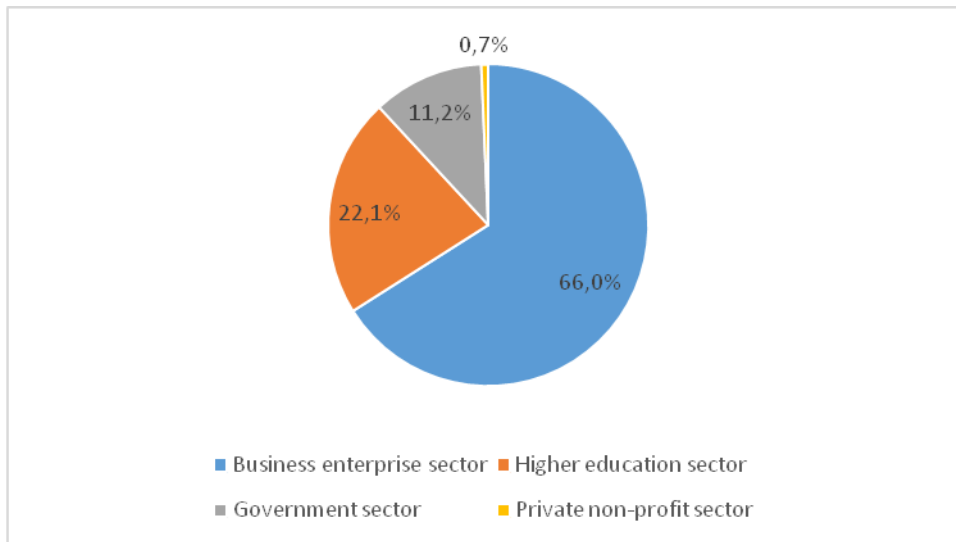


Fig. 1 The sources of investments in R&D in EU countries (2017)

Source: formed by the authors on the basis of [6]

As for Ukraine, according to provisional data, the share of total R&D expenditures was 0.47% of GDP (the least amount among the EU countries – 0.5% of GDP in Romania) [7]. There is a significant difference between

the sources of investment. In Ukraine, unlike the EU, the public sector provided the largest share, and the higher education sector – the smallest (Figure 2).

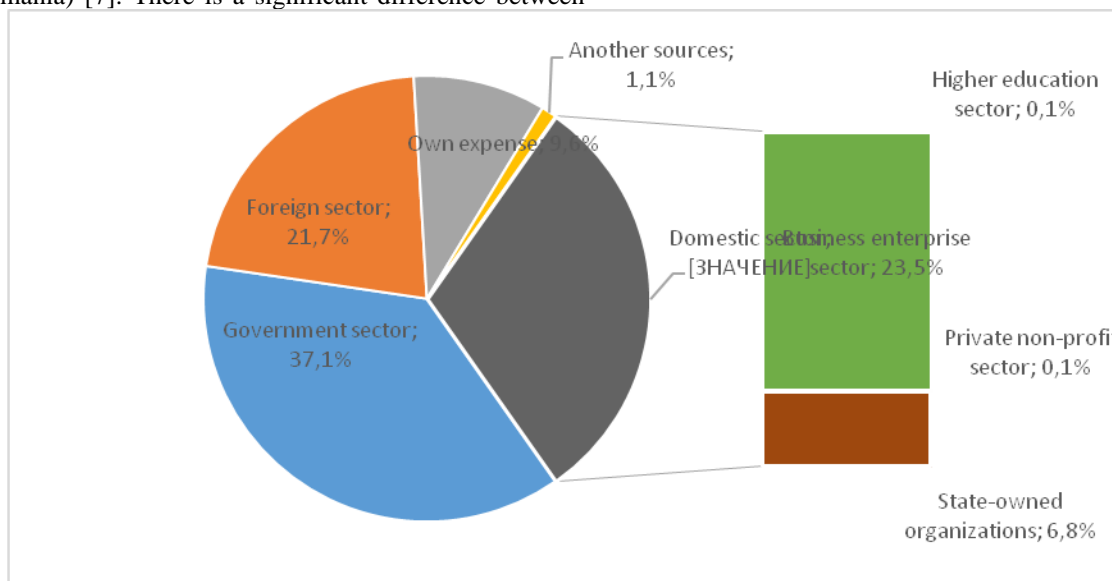


Fig. 2 The sources of investments in R&D in Ukraine (2018)

Source: formed by the authors on the basis of [7]

Another target of the Europe 2020 Strategy is to increase the average EU employment rate to 75% [4].

As of 2010, the share of employed 20- to 64-year-olds was 68.5%. This indicator increased to 73.9% by 2019, which indicates the possibility of the goal achievement. Simultaneously, there was a discrepancy between the indicators of individual EU countries. Regarding indicators for individual states, their goals as of 2019 exceeded 17 countries [5].

In Ukraine the share of employed 15- to 59-year-old people was 67.6% in 2019. 3 of the EU countries had lower employment rate: Greece (61.2%), Italy (63.5%) and Croatia (66.7%), but the target of 62.9% was exceeded) [8].

The educational targets of the EU are declining the share of early leavers from education and training to 10% or less and increasing the share of 30- to 34-year-olds having completed tertiary education to 40% or more by 2020 [4].

As of 2010, the EU’s average share of early leavers from education and training was 13.9%. It decreased to 10.3% in 2019, which indicates the possibility of the target achievement. This drop was primarily due to the creation of new assistance programs for children from disadvantaged families. As of 2019, this share was less than 10% in 17 EU countries. The best indicators were in Croatia (3.1%), Greece (4.3%), Lithuania (4.4%) and Slovenia (4.5%), the worst – in Spain (17.2%), Malta (16.7 %) and Romania (15.7%). Regarding indicators

for individual countries, their goals as of 2019 exceeded 15 of them [5].

Ukrainian share of 14- to 35-year-olds with the level of basic general secondary degree of education or lower was 14.4% in 2016. But Ukrainians usually complete basic general secondary education at the age of 15 or 16-year-old, so we can't compare exactly this indicator with the EU's one [9]. Nevertheless, Malta (19.2%), Spain (19%) and Romania (18.5%) had higher shares of people aged 18-24 with at lower secondary education and not in further education or training.

The share of people aged 30 to 34 with university degrees in the EU was 33.8% in 2010. It reached the 40% target in 2018 due to an increase in public investment in higher education and, as of 2019, was 41.6%. This indicator exceeded 40% in 18 EU countries in 2019. The highest rates were in Cyprus (58.2%), Lithuania (57.6%), Luxembourg (56.5%) and Ireland (55.9%), the lowest – in Romania (25.4%), Italy (27.5%, but the individual target of 26% is exceeded), Bulgaria (32.7%) and Hungary (33.9%). Regarding indicators for individual states, 18 of them exceeded their goals as of 2019 [5].

30.2% of 14- to 35-year-old Ukrainians had completed tertiary education in 2016 (in the EU it was 39.2% of 30- to 34-year-olds). So it's very good indicator for Ukraine, bearing in mind that the age group is wider than the EU's one and that Ukrainians usually finish tertiary education at the age of 21-year-old and older [9]. Nevertheless, Romania (25.6%), Italy (26.2%, but the target of 26% was exceeded) and Croatia (29.3%) had lower shares [5].

Another strategic goal is to lift 20 million people or more out of the risk of poverty or social exclusion compared to 2008, which means reduction of the number of people in such risks from 80 to 60 million [4].

As of 2018, the number of people living with the risk of poverty or social exclusion had declined by 7.156 million people compared to 2008. This indicates the difficulty of the target achievement, bearing in mind that the indicator was negative only in 2009, 2017 and 2018 (Figure 3). However, it was negative during last two years and it's decreasing since 2012, which makes the forecasts of achieving the target more optimistic [5].

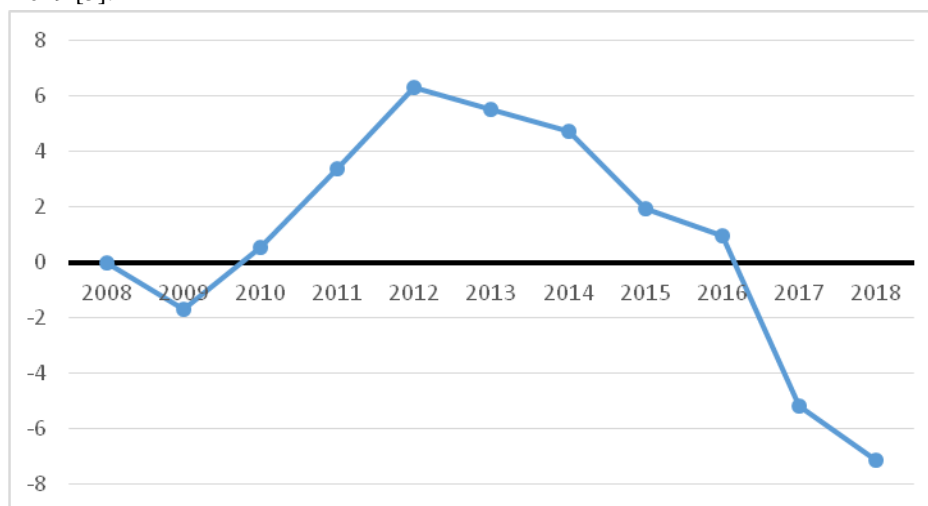


Fig. 3 Cumulative difference in the number of people living in the risk of poverty or social exclusion compared to 2008 (million people)

Source: formed by the authors on the basis of [5]

The poverty level in Ukraine remains high. In 2013, 22.4% of the population were below the actual cost of living, in 2014 – 28.6%, and in 2015 this figure doubled to 58.3%. In March 2016, the Cabinet of Ministers of Ukraine adopted the Poverty Reduction Strategy. As of 2017, the indicator decreased to 47.3% [10].

Europe 2020 strategy goals on climate and energy are declining greenhouse gas emissions by 20% compared to 1990, increasing the share of renewable energy sources in gross final energy consumption to 20%, cutting greenhouse gas emissions to 2618.17 million tons of carbon dioxide equivalent, primary energy consumption to 1483 million tons of oil equivalent and final energy consumption to 1086 million tons of oil equivalent [4].

As of 2017, greenhouse gas emissions in the EU amounted to 78.34% of the 1990 level, which even exceeded the set goal, but it increased by 0.53% compared to 2016. Post-Soviet countries – Lithuania (42.66%) and Latvia (44.32%) – had the best indicators. However, emissions were more than 80% of 1990 level

in 15 states. In 6 of them, indicators were over 100%: Cyprus (155.67%), Portugal (122.8%), Spain (121.83%), Ireland (112.94%), Malta (112.23%) and Austria (106.23%).

Concerning quantitative indicators, as of 2010, greenhouse gas emissions in the EU amounted to 2735.39 million tons of carbon dioxide equivalent. The goal had already been achieved in 2011, when greenhouse gas emissions amounted to 2618.07 million tons of carbon dioxide equivalent. In 2014-2017, there was an increase in greenhouse gas emissions in the EU, namely from 2478.19 million to 2574.45 million tons of carbon dioxide equivalent, but in 2018 it decreased to 2562.08 million tons of carbon dioxide equivalent. Regarding indicators for individual countries, 15 of them exceeded their goals as of 2018. This was achieved, first of all, through the development of renewable energy, the adoption of new technologies and, as a result, increased efficiency in the use of resources by economic entities [5].

Greenhouse gas emissions in Ukraine was 35.3% of the 1990 level in 2017, which is better than results of all the EU countries.

Concerning quantitative indicators, as of 2017, greenhouse gas emissions in Ukraine amounted to 310.3 million tons of carbon dioxide equivalent. It's quite a large amount [11]. Only 3 EU countries had bigger amounts in 2017 – Germany, France and the United Kingdom (466.87, 352.8 and 332.05 million tons of carbon dioxide equivalent respectively).

The share of renewable energy sources in the total EU consumption was 12.9% in 2010. It reached 18% in 2018, which indicates the possibility of the goal achievement. As of 2018, 12 countries exceeded 20%. Sweden (54.6%), Finland (41.2%) and Latvia (40.3%) had the biggest shares. The worst indicators were in the Netherlands (7.4%), Malta (8%) and Luxembourg (9.1%). Regarding indicators for individual states, their goals as of 2018 exceeded 12 of them. The increase in the share is caused by the development of technologies, drop in the cost of their implementation and government support for the use of such energy sources [5].

According to the Energy Strategy of Ukraine until 2035, the share of renewable energy sources in final energy consumption should be 8% by 2020 and 25% by 2035 (in the EU 27% by 2030) [12]. As of 2017, it was 6.66%, which means the goal can be achieved [13]. Only 2 EU member states had less share in 2017 – Luxembourg (6.29%) and the Netherlands (6.46%).

As of 2010, primary energy consumption in the EU was 1657.5 million tons of oil equivalent. It declined to 1551.9 million tons by 2018. Thus, the goal can be achieved. Regarding consumption in individual countries, 14 of them exceeded their goals in 2018.

In 2010, the gross final energy consumption in the EU amounted to 1163.2 million tons of oil equivalent. It had been able to achieve the set goal already in 2014, when this indicator decreased to 1067.6 million tons. However, the volume of gross final energy consumption in the EU was growing in next years and it reached 1124.1 million tons in 2018, which didn't meet the goal. So, it won't be achieved if existing trends maintains. As of 2018, only 9 countries reached their targets by increasing the energy efficiency of local industries [5].

Concerning Ukraine, the gross final energy consumption amounted to 51.2 million tons of oil equivalent in 2018 [14]. 6 EU countries consumed more energy than Ukraine.

The shift to a more circular economy will provide the creation of new jobs in many economic sectors. However, economic activity and employment will decrease in some of them. For example, mining, especially of coal, will be reduced, so many mining workers will become unemployed. Therefore, it is very important to provide the possibility of retraining these people to prevent an increase in social tension in society.

Improving resource efficiency involves the use of fewer materials. It leads to minimization of wastes, increasing of the demand for supporting materials and services designed to extend the life of durable goods. In sectors offering durable goods, there will be less demand, as these products will become even more durable according to market requirements. Therefore, to keep, and possibly increase revenue, these companies need to additionally

ensure repair and maintenance services on their own, offering service contracts at the point of sale or providing the product for rent and its service meanwhile.

Additional investments required for the shift to a circular economy are estimated at 3% of GDP per year. Agriculture, forestry, installation, construction, reconstruction, waste management and engineering, maintenance, repair, education, employment and some other sectors will require more investment. However, not all EU countries can provide so big amount of investments from their budget. They should be borrowed or provided through EU budget channels or investment funds. But in the long run, it is quite possible to raise funds from profit from the trade balance received through the adoption of a circular economy model [15].

Another problem might be the disagreement between the EU states on the development of energy sector. For example, France still remains concentrated on nuclear energy, although this type of energy is dangerous for the environment and its development doesn't meet the plans of the European Commission [16].

Ukraine should improve all these spheres to become more competitive in world markets and decrease social tension in society. It's also very important in the context of the further integration into the EU. First of all, Ukraine should improve the legislation, promote the development of science and technology, the introduction of energy and resource-saving technologies, improve the investment climate, improve the skills of workers, provide their retraining, increase the solvency of the population.

In general, to direct society towards sustainable economic, social and environmental development, it is appropriate to reform the tax system. There is a need for decreasing labor taxes, since services arising from the transition to a circular economy (design, maintenance, improvement, repair, reuse, etc.) will require more work force, although production will require less labor. It is necessary to increase taxes on the consumption of non-renewable resources to stimulate the acceleration of the transition of by business entities to renewable energy sources and increase their resource efficiency. At the same time, it is also necessary to analyze of the value-added tax (VAT) system [15]. Goods made from recyclable materials (VAT already paid) should be exempted from VAT, which will encourage the use of recyclable materials and help to remedy the situation when the use of new materials is often cheaper than the use of recycled ones.

### Conclusions

Due to many factors, the EU is aware of the need to change the current economic model. The Union sees the solution to the problems of imperfection of the current linear economy model, including dependence on the import of energy resources, in a gradual transition to a circular one.

Today, this shift is manifested, first of all, in the implementation of the Strategy "Europe 2020: A strategy for smart, sustainable and inclusive growth". It is aimed at increasing the level of employment, the innovativeness, the degree of competitiveness, resource efficiency and environmental friendliness of the EU economy. Nowadays changes for the better in all these areas are obvious, but as of 2017-2019 targets have been achieved only in the share of 30- to 34-year old people

having completed tertiary education (41.3% with the target of 40%) and greenhouse gas emissions (78.34% of the 1990 level with the target of 80%, or 2562.08 million tons of carbon dioxide equivalent with the target of 2618.17 million tons).

Concerning Ukraine, it has good indicators in educational sphere, but in other spheres country inferior to the most EU states.

The shift of the economy into a circular one may be accompanied by such burning problems as job loss by workers in some, mainly extractive industries, reduction in demand for durable goods, insufficient investment,

which may increase in the EU in case of misunderstandings between member states. Therefore, there is a need to provide the possibility of retraining for workers in sectors where labor demand is declining, and for those who wish to become a specialist in new economic sectors. It is rational to reform the tax system, primarily the VAT system, to stimulate the transition of enterprises to the principles of a circular economy. Ukraine also should improve the legislation, the investment climate, increase the solvency of the population and promote the development of science and technology.

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